SAMUEL ADLER

THE STUDY OF ORCHESTRATION

THIRD EDITION

THE STUDY OF ORCHESTRATION

THIRD EDITION

Samuel Adler

Professor Emeritus, Eastman School of Music of the University of Rochester
Composition Faculty, Juilliard School of Music



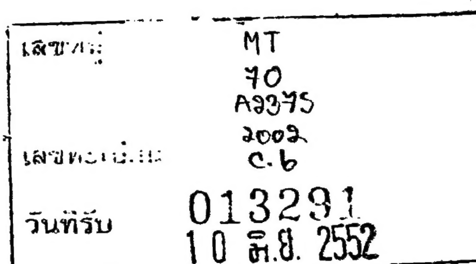
W. W. Norton & Company, Inc.
New York London

Printed in the United States of America
The text of this book is composed in Palatino & Sonata with the display set in Frutiger & Copperplate.

Editor: Suzanne La Plante
Manuscript Editor: Barbara Curialle Gerr
Project Editor: Julie Schnepel
Proofreaders: Lisa Robinson, Claire McCabe, music;
Rosanne Fox, Julie Schnepel, text
Research and Editorial Assistants: Jan Hoeper, Claire McCabe
Director of Manufacturing: Roy Tedoff
Book Design: Joan Greenfield
Composition: UG / GGS Information Services, Inc.
Music Composition: Kenneth Yarmey, with Yuzuru Sadashige
Layout Artist: Roberta Flechner
Manufacturing: Quebecor/World

Library of Congress Cataloging-in-Publication Data

Adler, Samuel, 1928–
The study of orchestration / Samuel Adler.—3rd ed.
p. cm.
Includes bibliographical references and index.
ISBN 0-393-97572-X
1. Instrumentation and orchestration. I. Title



MT70.A3 2001
781.3'74—dc21 99-055023

W. W. Norton & Company, Inc., 500 Fifth Avenue, New York, N.Y. 10110
www.wwnorton.com

W. W. Norton & Company, Ltd., Castle House, 75/76 Wells St., London W1T 3QT

7 8 9 0

CONTENTS

APPENDICES

In this book, the octave designations of pitches are represented by superscript numbers, such that middle C equals C^4. For example:

C three octaves below middle C to the B above: C^1 – B^1; middle C to the B above: C^4 – B^4; C three octaves above middle C to the B above: C^7 – B^7.

PREFACE

While I was working on the first edition of *The Study of Orchestration*, I was asked to give a lecture to a convention of composers on the subject. I titled my lecture "Where To, Now?" and brashly previewed what music of the 1980s and 1990s would be like. My prophecy, which I thought brilliant at the time, missed the mark completely; my prognostications have come back to haunt me over these past twenty-odd years.

In 1979, I stated that music of the last quarter of the twentieth century would be even more complex and ever more experimental than in the decades since World War II. New methods of notation would be devised, new instruments would be invented, and possibly even new concert spaces would be created to accommodate the cataclysmic changes that I predicted would occur.

It is indeed an understatement to say that my soothsaying was dead wrong. In fact, the music composed during the last two decades is distinguished by a new simplicity—a new love affair with a romantic, quite user-friendly, and sometimes even popular style. I am not implying that all composers everywhere in the world now adhere to this formula; certainly many distinguished composers are still perpetuating the more complex traditions of our century, but generally the most-performed younger composers use a much less stringent musical vocabulary to express their ideas.

A similar situation exists in the realm of orchestration. Although new notation and extended instrumental techniques were all the rage from the mid-twentieth century through the middle 1970s, a more traditional approach to the orchestra seems to have regained a foothold, despite all of the previous focus on experimentation. A good case in point is the work of the Polish composer Krzysztof Penderecki, who as one of the leaders of the postwar avant garde forged a powerfully new orchestral sound. Penderecki's orchestral works since the early 1970s can be characterized by their Romantic, almost Sibelius-like orchestral writing. This is not a critical statement but rather one of fact. Younger composers, especially those in America, have profited greatly from experimentation with unusual playing techniques and their own experience with electronic music, but their love of the traditional orchestra and its early twentieth-century masters (Mahler, Schoenberg, Stravinsky, Bartók, and others) has perhaps influenced their orchestral expression even more. Where will these composers ultimately be heading? Where will the generation after them end up? It's anybody's guess.

Having had the opportunity to examine dozens of orchestral scores by successful young composers several times a year, I find that their use of the orchestra is both imaginative and effective. It also demonstrates their thorough knowledge of the traditional orchestral literature. These composers have indirectly served as the inspiration behind *The Study of Orchestration* since its first edition; the book's goal has been to help as many students as possible achieve the successes that these young composers have achieved. The third edition has several

new features designed to make this happen. Although most composition students may have a constantly expanding knowledge of the orchestral repertory, the average music student attending a school of higher learning may not. I have learned, in my own teaching as well as from the remarks of colleagues, that a tremendous gap exists between what the average music student should know about even the most traditional orchestral repertoire and what they actually do. As a partial remedy I have added many more works to the lists of additional pieces for study at the ends of chapters (in most cases whole movements or entire works). I would like to advise instructors to give listening assignments over and above the regular orchestration projects that are found in the workbook. Only by listening and getting to know the repertory will a student sharpen his or her ear for orchestral sounds, and I believe that this listening component will help students expand their entire musical horizon.

This new edition retains many standard excerpts from the orchestral literature, as well as copious examples from twentieth-century orchestral literature. The new edition cites many more references than the past two did to newer orchestral works, from which the experienced orchestrator will be able to glean valuable information.

As always, I have profited greatly from the suggestions and criticisms of many colleagues and other individuals. The chapters on the trombone, the harp, and the orchestral percussion section have been expanded, and the discussions of several string techniques, such as harmonics, which have presented problems for many students, have been clarified. In the workbook quite a few new excerpts have been added and a great many substitutions have been made in works to be orchestrated.

One of the most significant changes is the accompanying CD package, which not only contains recordings of all the music excerpts found in the book but also a CD-ROM program that enables students to access professional-quality videos of each instrument and instrumental technique used in the standard orchestra. The CD-ROM also allows students to test themselves on a number of topics and helps them make more informed "orchestrational" choices by working through several different reorchestrations of well-known orchestral works by Verdi, Tchaikovsky, Debussy, and Mahler. The reorchestration modules challenge students to apply their growing knowledge and individual taste to larger issues of orchestration. I hope that this kind of exercise will produce lively class discussions and encourage instructors and students to develop similar types of exercises. The CD-ROM also contains composer biographies that focus on their particular methods of orchestration and that draw examples from their important orchestral works.

Since music is the art of sound, every topic connected with its study has to do with training the ear. To me, the technique of orchestration entails the abilities to hear instrumental sounds individually and collectively and to transfer these sounds into written notation as accurately and clearly as possible. The two distinct parts of this book go a long way toward accomplishing this goal.

Part One, Instrumentation, may be thought of as the rudiments of orchestration. The purpose of each chapter in Part One is to enable the student to hear the sound quality of each instrument and the changes in that quality throughout its range; to learn the practical ranges of each instrument; and to get to know the most effective uses of each instrument within orchestral settings of each musical era. To that end I have included many solo instrumental excerpts to expose stu-

dents to the sound of each individual instrument. Some of these solo passages are later shown in their orchestral context (I have provided cross-references within the text to these orchestral passages); others are simply used to demonstrate the range or timbres of the individual instrument. I would like to suggest, however, that whenever possible the instructor play a recording of the solo passage in its orchestral context.

Part One is organized around the four sections of the orchestra, with chapters that focus on the individual instruments within a particular section preceding discussions of orchestrating for the entire section. I would like to encourage instructors to use the chapters on scoring for woodwinds, brass, and percussion to introduce students to writing for wind ensemble, which in essence is simply writing for winds, brass, and percussion without strings, since the basic techniques of the instruments used by both orchestra and band are essentially the same.

As in the previous two editions, Part Two deals with the orchestra as a whole. Individual chapters, or sections within chapters, focus on the techniques of transcribing piano, chamber, band, and other music for orchestra; the orchestra as accompanist; and the preparation of score and parts. Since many composers today prepare their scores on the computer, I have added a short discussion about using computer programs such as Finale, Score, and Sibelius and some of the hazards they present.

In recognition of the likelihood that many musicians using this book will be teaching in public schools, I have given special emphasis to transcribing orchestral works for the odd combinations that may be found in school or classroom situations. In addition, quite a few instructors will be happy to find a new Chapter 19, which offers some basics on scoring for band. However, I have resisted the impulse to address the many different problems faced by the "bandstrator."* At the end of Chapter 19 I have supplied a suggested listening list of twenty-five works for wind ensemble, which may help the student learn how to score for that ensemble.

The appendices offer a quick reference chart of the ranges and transpositions of each instrument discussed in the book, as well as an up-to-date annotated bibliography of books on orchestration, notation, individual instruments, and electronic music. Concerning ranges, I have differentiated between the full (professional) ranges and those most often used by nonprofessionals, students, or amateurs. Appendix A also includes the names of orchestral instruments in four languages, their English abbreviations, and some frequently used orchestral terms in tabular format.

Even though I have omitted an extended discussion of electronic instruments in the body of the book rather than give superficial generalizations, I believe these instruments are of tremendous importance in today's sonic landscape. Therefore, in Appendix B I have provided a list of important books and periodicals in which these instruments are discussed. I recommend these books especially to the reader interested in popular and rock music.

The revised workbook, the set of six enhanced CDs, and a teacher's manual, with answers to the workbook questions, complete the "orchestration package."

---

*There are several books specifically geared toward "bandstration"; the best among them, in my opinion, is that by Joseph Wagner, entitled *Band Scoring: A Comprehensive Manual* (McGraw-Hill, 1960).

The workbook provides a range of exercises that test students' newly acquired skills. To the many Listen and Score exercises that were a part of the second edition, six new ones have been added that reflect more basic orchestrational techniques. These Listen and Score excerpts should expand students' grasp of the orchestral medium in very specific ways. In addition, there are now exercises where a given full score is to be reduced.



"It takes a village" to correct and update books like *The Study of Orchestration*. I am grateful to many people. First of all, let me thank my former colleagues at the Eastman School of Music for their valuable input: John Marcellus, for his advice on "all things trombone"; Christopher Rouse, for his many suggestions concerning the percussion section; Augusta Read Thomas, for her corrections throughout the book; Allan Schindler, for his input about electronic and computer music; and Donald Hunsberger, for his efforts concerning the recording of the new excerpts for the enhanced CDs that accompany this volume. Kathleen Bride, besides playing the new examples for the CD so beautifully, also contributed several corrections and additions that have been incorporated into the harp chapter. I am also indebted to Jane Gottlieb, the librarian of the Juilliard School of Music, for her assistance in tracking down rather obscure publication information.

Further, I would like to express my sincere thanks to the faculty, students, and administration of the Eastman School of Music for their cooperation and encouragement to me at every step in the creation of the new enhanced CD set. Also, the readers assembled by W. W. Norton—David Sills (Ball State University), Robert Gibson (University of Maryland, College Park), Mark DeVoto (Tufts University), Michael Matthews (University of Manitoba), and Randall Shinn (Arizona State University)—were very insightful, and I thank each of them for their many suggestions, all of which I considered very seriously and to a large extent incorporated into the new edition.

Finally, some very special kudos. First, I would like to express my appreciation to the Ann and Gordon Getty Foundation for their generous support, which enabled us to produce the enhanced CD set that accompanies this edition.

Thanks also to Thomas Frost and the recording staff of the Eastman School of Music, headed by David Dusman, and to James Van Demark and the members of his company, Square Peg Entertainment, who together produced an extraordinary set of videos and audio recordings.

Being rather ignorant of the ways of computers, I owe a great deal of gratitude to one of my former students, Dr. Peter Hesterman, for his expertise and imagination in creating the CD-ROM. His vision has made this new component a most effective teaching tool.

This entire project could not have been accomplished without the tremendous editorial skills and long-suffering patience of my editor at W. W. Norton, Suzanne La Plante. Her efforts on behalf of this volume, as well as of the electronic supplements, have been superb. She has guided the project from its inception and has been of constant support and assistance to me in every step of this endeavor. I cannot thank Suzanne enough for her commitment and her continuous desire to fashion a product of excellence.

PART ONE

INSTRUMENTATION

1

THE ORCHESTRA—YESTERDAY AND TODAY

Aristotle, in his famous discourse "On Music," said: "It is difficult, if not impossible, for those who do not perform to be good judges of the performance of others." He was referring to solo performance on instruments or singing; but the same may be said of those who must judge the worth, competence, and effectiveness of a piece of orchestral music. Hands-on experience in a specific area of the musical arts makes a composer, conductor, teacher, performer, or student a better practitioner in that particular aspect of music. Since so many musicians deal with the great instrument we call the orchestra, it is most important that the study of orchestration and instrumentation become a basic part of every musician's education.

The orchestra is certainly one of the noblest creations of Western civilization. The study of its intricacies will illumine many important areas of music. After all, timbre and texture clarify the form as well as the content of a host of compositions. Further, specific orchestral colors and even the spacing of chords in the orchestral fabric give special "personality" to the music of composers from the Classical period to our own time. In an informative book called *The History of Orchestration*, Adam Carse concludes with this judgment:

> Orchestration has been many things to many composers. It has been a servant of the great, a support to the mediocre, and a cloak for the feeble. Its past lives enshrined in the works of the great dead, its present pants after the exertion of recent progress, and its future lies as completely hidden as it lay at the end of the sixteenth century.*

Mastering the technique of orchestration leads one to a deeper understanding of the sensitivity with which the great masters of composition have handled the symphony orchestra and how each made this remarkable instrument serve his or her musical ideas in the clearest and most vivid ways.

The art of orchestration is of necessity a highly personal one. The orchestral sound of Wagner, for instance, is vastly different from that of Brahms, even though these two composers lived at the same time. In this regard, orchestration is similar to harmony, melody, or any other parameter of music. It is, therefore, imperative that one acquire the basic skills of the art in order to make it personal at a later time. The ear will be the deciding factor in the choice of instruments as well as in combinations of instruments. For that reason we shall immediately

*Adam Carse, *History of Orchestration* (New York: Dover, 1964), p. 337.

concentrate on developing the ear and trying to make it capable of listening and distinguishing colors.

The goal of this book is to acquaint the reader with the distinctive, particular sound each instrument makes alone and in combination with other instruments, as well as with the techniques used to produce these sounds. Acquiring this knowledge will enable a composer to write down a particular tone color in score for realization in performance when it is heard in the inner ear (or mind). Walter Piston put it succinctly: "You've got to hear what you put on that page." Let us call this "hearing mentally."

Compared with the development of other areas in the discipline of music, orchestration, as we know it, is a latecomer. It is very true that instruments have been used since the dawn of history, but they were employed for the most part to accompany voices or improvise during festive occasions. During the Middle Ages and the Renaissance, the composer never specified the exact instruments that were to perform the various parts, but rather designated a "soprano, alto, tenor, or bass" instrument. In the preface to his opera *Combattimento* (1624) Monteverdi wrote: "A uniform basic mood throughout a piece postulates an unchanging combination of instruments all the way through." Even as late as 1740, Leopold Mozart wrote in the preface to one of his *Serenatas* that "if the alto trombone player is inadequate, a violinist should be asked to perform the trombone part on the viola." But by the middle of the eighteenth century this was an anomaly rather than the norm.

From as early as 1600, the orchestra as we know it began its rather slow development. We learn from such writers as Francis Bacon that in the middle of the seventeenth century in England, there were still two kinds of consorts: *musica fracta*, the broken or heterogeneous consort, and *musica sociata*, the whole or homogeneous consort. However, orchestras were springing up in many of the courts of Italy, France, and Germany. We may divide the history of the orchestra into two broad periods: from the beginnings of the orchestra to the death of Bach and Handel around 1750; and from the Mannheim School, Haydn, and Mozart to the present.

During the first period, there was an emphasis on the stabilization of the entire orchestra. The string choir was the first to be exploited because the construction of the four constituent instruments—violin, viola, cello, and double bass—was perfected by the end of the seventeenth century. The institution of public concerts in the eighteenth century was the catalyst for the gradual creation of an orchestra with multiple strings. The media of opera and ballet also considerably aided the advancement of orchestral technique as well as the concern for very specific colors. Lully, as early as 1686, used a string orchestra plus flutes (or recorders), oboes, bassoons, horns, trumpets, and timpani. Again, one must say that this orchestra was as yet not universally accepted. Throughout his lifetime, Bach experimented with all kinds of orchestral combinations, especially as accompaniment for his cantatas. In his case, as was so often true for composers of that period, availability of performers largely dictated the constitution of his orchestra. By the time of Haydn and Mozart, stabilization had almost been achieved, and it was accepted that an orchestra, as distinct from a large chamber group, was made up of three different choirs: the strings (first violins, second violins, violas, cellos, and double basses), the woodwinds (two flutes, two oboes, two clarinets, and two bassoons), and the brass (two horns, two trumpets, and timpani). As yet the standard symphony orchestra had no

separate percussion section, but it did exist in the opera orchestra. Such instruments as snare drum, bass drum, triangle, and cymbals were commonly found in opera scores. The timpani, however, were classified with the brass in the Classical orchestra. The reason for this was utilitarian, since the timpani invariably played together with the trumpets. Seldom are there cases during this time when the two are used separately. There has always been confusion as to why the trumpets are placed below the horns, even in the most modern orchestral scores, even though the trumpets usually play in a higher range than the horns. The reason is historical: horns were used in the orchestra earlier than trumpets, and the trumpets were placed on the score near the timpani since their music was usually coupled.

From the Classical period on, the orchestra grew and expanded rapidly. First, auxiliary instruments such as piccolo, English horn, bass clarinet, and contrabassoon were added to increase the range of the wind choir, and other instruments were brought into the symphony orchestra from the opera orchestra (trombones, harps, and the larger percussion battery). Berlioz assembled huge orchestras for specific occasions in which the wind, brass, and percussion sections were more than doubled and the string choir was greatly enlarged. By the time of Mahler and Stravinsky, the large orchestra as we know it today was an accepted norm. The strings, instead of 6, 6, 4, 4, 2, were 18, 16, 14, 12, 10 (the numbers, of course, stand for the number of players in each of the five string sections). Nor was it uncommon to employ six flutes, five oboes, six clarinets, four bassoons, eight horns, four trumpets, four trombones, two tubas, two harps, piano, and a host of percussion instruments requiring four to five players.

Not only has the size of the orchestra increased, but its use has grown more sophisticated. When it does not matter what instrument plays a certain part, the composer relinquishes responsibility for the orchestration; and, at least from today's perspective, he or she is not much concerned with timbral problems. However, as the orchestra became a huge apparatus and every note, chord, timbre, and nuance became an integral part of the composition, it was necessary to codify the art of orchestration so that it could be taught. Some of the great orchestrators of the nineteenth century felt compelled to set down their ideas and insights. Two of the outstanding orchestration texts of the nineteenth century are those by Berlioz (revised by Richard Strauss) and by Rimsky-Korsakov. Both treatises are concerned with the techniques of each instrument separately and the various combinations that proved successful in the authors' own works. Rimsky-Korsakov used only his own works to illustrate each point; he was, after all, a great orchestrator and a daring experimenter who provided us with insights and explanations that would not have been possible had he used works by other composers.

It has been said that Maurice Ravel was asked by his publisher to write a book on orchestration. He respectfully declined but was reported to have told his friends that if he were to write such a volume it would include everything in his own orchestral music that, in his view, was an orchestral miscalculation. Since we have come to consider Ravel one of the true giants of orchestration, how very interesting it would have been to have such a book, for one cannot think of Ravel's orchestral writing as weak in any way. In this connection, it is important to note that tastes in orchestration change and some of the problems attendant on these changes will be discussed in Chapters 15, 16, and 17. Such

great musicians of the past as Wagner, Mahler, Weingartner, Mengelberg, Toscanini, and Beecham took it on themselves to "improve" the orchestrations of Beethoven and Schumann symphonies to suit the larger orchestras and the fashion in orchestral sonorities of the late nineteenth and early twentieth centuries. Mozart reorchestrated Handel's *Messiah*, adding clarinet and trombones to the original in order to satisfy the ears of late-eighteenth-century audiences.

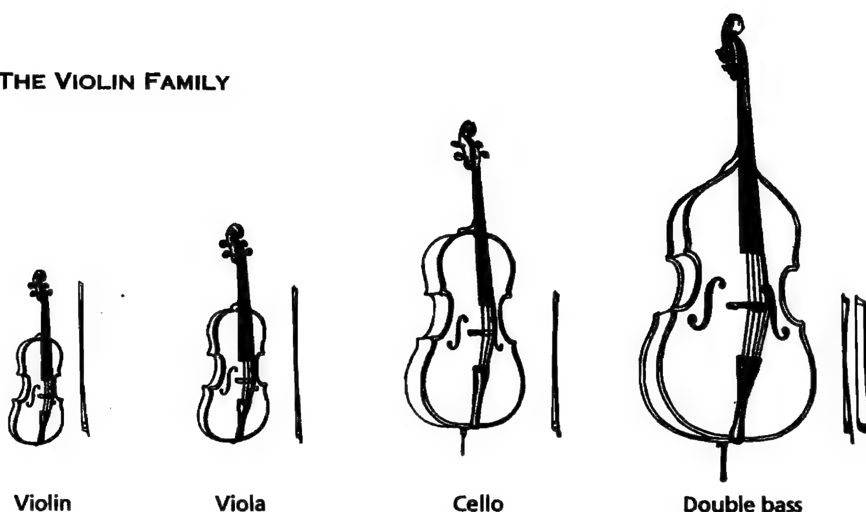
The art of orchestration today is a sophisticated and intricate one. It is also highly individual, depending greatly on the taste and even the prejudice of the composer or orchestrator. Realizing this, one should master the techniques of writing for each instrument and listen carefully to the various combinations. A student can learn much from reducing a full score to its bare essentials so that it may be performed on the piano, or from "blowing up" a score from a piano part. This kind of activity has been common practice for well over one hundred years and offers invaluable lessons about clarity and coloration in the orchestra. Such fabulous orchestrators as Ravel, Debussy, and Stravinsky often composed their most advanced orchestral scores at the piano and then orchestrated them, whereas Webern and Berg zealously made piano arrangements of huge orchestral scores by Schoenberg and Mahler in order to make them easier to study. In our time, the composer or orchestrator is often called on to reorchestrate certain works for our large music-education establishment. During the course of this book, all these and other practical possibilities will be addressed.

Throughout this book, the instruments most commonly used in the modern symphony orchestra receive the broadest exposure. On the other hand, with the advent of so many Baroque ensembles and heterogeneous large chamber groups, it was deemed important to include a few instruments peculiar to such ensembles and to describe basic techniques and concepts associated with them. Appendix B gives some bibliographic references for further information about the instruments that are discussed less thoroughly.

2

Bowed String Instruments

The Violin Family



The modern symphony orchestra is usually divided into four sections or choirs: strings, woodwinds, brass, and percussion. The bowed string choir—violins, violas, cellos, and double basses, technically called *chordophones**—was the first to be developed fully and exploited by composers. This preferential treatment may be explained on two counts: the strings, of all the choirs, reached their present state of technical perfection in construction by 1700; and the "violin family," as it is sometimes called, has the greatest number of properties in common.

Some other reasons composers have given the violin family priority are:

1. its enormous range, encompassing seven octaves between the double basses and the violins;
2. the homogeneous tone color throughout its entire range, with only slight variations in the different registers;
3. its wide dynamic range, from an almost inaudible *pianissimo* to a most sonorous *fortissimo;*
4. the richness of tone quality, which produces a particular warmth that lends itself to the performance of *espressivo* passages;
5. its versatility in producing different kinds of sound (bowed, plucked, struck, and so on) and performing rapid passages, slow sustained melodies, skips,

*The term for musical instruments that produce sound by means of strings attached between fixed points. (See also p. 449.)

trills, double stops, and chordal configurations, as well as special (even extramusical) effects;

6. its ability to sound continuously, unhampered by the player's need to breathe (as distinct from wind instruments).

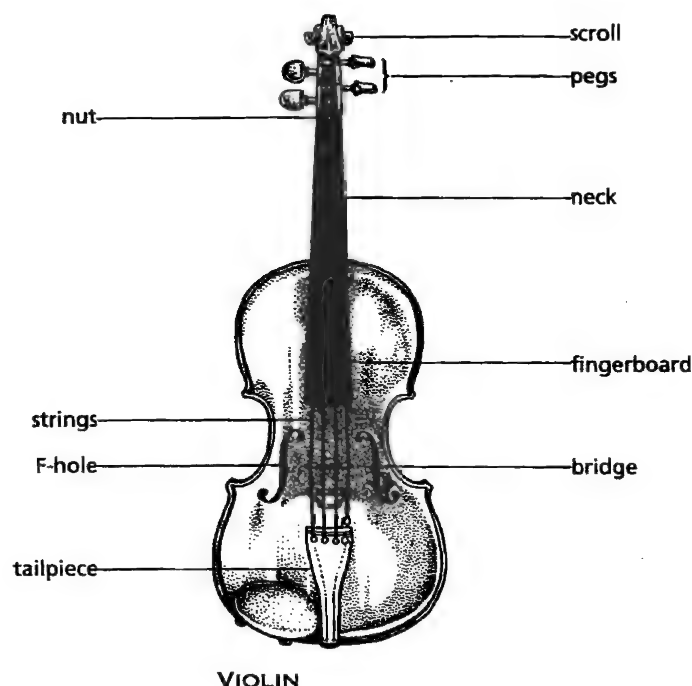
The string section of a full symphony orchestra consists of the following number of players, with two players sharing each stand:

first violins	16 to 18 players	8 or 9 stands
second violins	14 to 16 players	7 or 8 stands
violas	10 to 12 players	5 or 6 stands
cellos	10 to 12 players	5 or 6 stands
double basses	8 to 10 players	4 or 5 stands

CONSTRUCTION

Like a true family, all bowed string instruments have many things in common: the same construction and acoustical properties, similar playing techniques, and even special problems and peculiarities. Discussing these shared characteristics before considering each instrument separately will help clarify the familial status of each instrument, and help illuminate the slight variations and modifications that we will see each member exhibit when the individual instruments are discussed in turn. Since we shall use certain terms to describe the structure of string instruments throughout this book, this chapter introduces the appropriate nomenclature.

Except for the proportions, which will be given as each instrument is considered separately, the construction of all the instruments, as well as the names of the different parts, is identical to that of the violin diagram drawn below.



VIOLIN

Each instrument consists of two main parts: the body and the neck. Both are made of wood. The top surface of the body, called the *belly*, the *table*, or the *soundboard*, and the bottom, called the *back*, are both curved. Together with the sidewalls, called the *ribs*, they form a hollow box that acts as a resonator and strengthens the vibrations of the strings. The overall shape of the body somewhat resembles the human form; it also appears to have a waist. Inside the body is a *sound post*, which transmits the vibrations of the strings. The neck consists of a long, thin, shaped piece of wood, called the *fingerboard*. At its upper end is a *pegbox*, which holds the tuning pegs, and a small curved section above the pegs, called the *scroll*. Over the fingerboard and

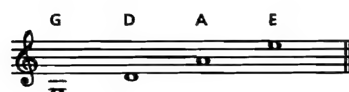
belly are stretched four strings, or in the case of the double bass, sometimes five. The strings, each wound around a tuning peg, pass thence over a small piece of wood, called the *nut*, along the fingerboard, then over another piece of wood, called the *bridge*; they are attached to a third piece of wood or plastic, called the *tailpiece*. A bow rubbed across the string between the place where the fingerboard ends and the bridge is positioned makes the string vibrate, producing a sound. The bridge, which supports the strings, also vibrates and its vibrations pass to the belly and, to a lesser extent, the back. Cutting through the belly are two sound holes, called F-holes because they resemble that letter in the alphabet. They permit the belly of the instrument to vibrate freely, and also provide sound exits from the body of the instrument.

TUNING

Three of the instruments of the violin family, the violin, viola, and cello, are tuned in 5ths, while the fourth, the double bass, is tuned in 4ths.

Here are the pitches of the open strings of the instruments. The term *open strings* refers to the strings as they sound when they are not touched, or stopped, by the fingers of the left hand.

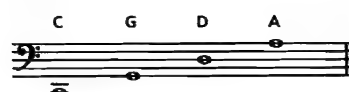
EXAMPLE 2-1. Tuning of the Four Violin Strings



EXAMPLE 2-2. Tuning of the Four Viola Strings



EXAMPLE 2-3. Tuning of the Four Cello Strings

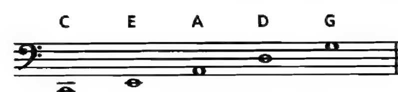


EXAMPLE 2-4. Tuning of the Four Double Bass Strings



A five-stringed double bass has a low C string added by means of a mechanical extension. The standard tuning of a five-stringed bass is:

EXAMPLE 2-5. Tuning of the Five-Stringed Double Bass



The double bass is the only transposing instrument of the violin family: it sounds one octave lower than written.

CD-ROM
CD-1
FINGERING/
SHIFTING

FINGERING

In order to produce pitches higher than that of an open string, the player presses the left-hand fingers firmly against the fingerboard, thus shortening the vibrating length of the string and consequently raising the pitch. The string itself vibrates only between the bridge and the nut. The left hand therefore moves from a position closest to the nut (*first position*) up the fingerboard toward the place where the bow is drawn across the string (which is between the end of the fingerboard and the bridge). As the hand moves up the fingerboard it shifts from one position to another. The shifting is executed in the manner shown in Example 2-6. Fingering is indicated above the staff: the number 0 denotes an open string, 1 the first finger (the index finger of the left hand), 2 the second finger (the middle finger of the left hand), and so forth.

EXAMPLE 2-6. First, Second, and Third Positions for the Violin and Viola

First position 0 1 2 3 4 — Second position 1 2 3 4 — Third position 1 2 3 4 — etc.

Here is the fingering for the five basic positions of the violin and the viola, as shown on the A string:

THE FIVE BASIC POSITIONS OF THE VIOLIN AND VIOLA

*First Position A String**	*Second Position A String*	*Third Position A String*	*Fourth Position A String*	*Fifth Position A String*
1st finger — B				
2nd finger — C	1st — C			
3rd finger — D	2nd — D	1st — D		
4th finger — E	3rd — E	2nd — E	1st — E	
	4th — F	3rd — F	2nd — F	1st — F
		4th — G	3rd — G	2nd — G
			4th — A	3rd — A
				4th — B

The principle of fingering is the same on all the bowed string instruments, but certain details are quite different, particularly for the cello and the double bass; therefore, we will discuss fingering at greater length in the special sections devoted to each instrument in Chapter 3.

*For the complete range of possible pitches produced in the first position on the violin, refer to the chart on p. 52; for the viola, the chart on p. 66; for the cello, p. 77; and for the double bass, p. 85.

DOUBLE, TRIPLE, AND QUADRUPLE STOPS

CD-ROM
CD-1
MULTIPLE STOPS

Two or more notes on adjacent strings played simultaneously are called *multiple stops*. When only two notes are played together, a *double stop* results. There are two kinds of double stops:

1. one or both of the pitches are played on an open string;
2. both pitches are played on stopped strings.

On all string instruments it is possible to play two notes on adjacent strings at the same time by fingering the two pitches and then drawing the bow across both strings.

Chords of three or four pitches, if they occur on adjacent strings, are also possible; these are called *triple stops* and *quadruple stops*. For triple stops, greater bow pressure has to be exerted on the middle string of the three that are played, so that all pitches can sound at the same time. For this reason, the simultaneous attack of three notes can only be accomplished at a relatively loud dynamic level (*f* or *mf*). When piano or pianissimo triple stops are desired, the performer usually has to arpeggiate them slightly. For quadruple stops, the bow is only able to sustain properly two pitches at a time. Therefore, all quadruple stops must be arpeggiated. (The bow used in the seventeenth and eighteenth centuries was more curved than it is today, and it was possible to sustain four-note chords more readily. The wood in the middle of the bow curved outward, away from the strings, unlike the wood on the modern bow, which curves slightly inward, toward the strings.) The most successful triple and quadruple stops contain one or two notes played on open strings, since these have a greater sustaining power.

Here are some examples of simple double, triple, and quadruple stops for each of the four instruments, along with a few examples that are impossible to perform since both pitches would have to be played on the same string. More complete charts for the violin, viola, and cello will be found in Chapter 3.

EXAMPLE 2-7. Violin

Not possible Possible

EXAMPLE 2-8. Viola

Not possible Possible

EXAMPLE 2-9. Cello

Not possible Possible

EXAMPLE 2-10. Double bass: Only double stops that include an open string are practical.

Not possible Possible

DIVIDED STRINGS

Divisi (It.); Divisés (Fr.); Geteilt (Ger.)

Since there is more than one player for each string part in a symphony orchestra, double stops are usually divided between the two players on the same stand. The player sitting on the right side of the stand (the "outside") performs the upper notes, while the one sitting on the left side (the "inside") plays the lower notes. To signal this division, the part is marked *divisi*, or its abbreviation, *div.* If the word *divisi* does not appear in the parts, the player would be correct in performing the chord as a double stop. Sometimes the indication *non div.* appears to ensure that each player will perform double stops. When *divisi* is no longer called for, the word *unisoni* appears in the part.

EXAMPLE 2-11. Debussy, *Nocturnes*, "Nuages," mm. 7–15 (strings only)

CD-1/TR. 1

7 Modéré
Timp.
Vln. 1
8va
pp
Div. a 6
a 3
Vln. 2
Vla.
Vlc.
D.B.

12
a 2
Vln. 1
a 3
a 2
pp
Vln. 2
a 3
a 2
pp
a 2
Vla.
pp
Vlc.
pp
pizz.
D.B.
pp

When triple or quadruple stops are to be divided, it is helpful to specify how this is to be done.

EXAMPLE 2-12. Dividing Triple and Quadruple Stops

div. non div.

If the composer wants the triple stops to be performed by three different players, the parts should be marked *div. a 3*, or in case of quadruple stops, *div. a 4*. If the division is to occur by stand—that is, first stand play the top note, second stand, the next lower note, and so on—it is best to write out three or four different lines in the part and give the direction "Divide by stand." The Italian for "by stand" is *da leggii;* French, *par pupitres;* German, *Pultweise* (*Pult.*).

In the following example, the composer not only has indicated the division by stand to the left of the score, but also has specified *divisi* (*geteilt*) instructions for each stand within the body of the score.

CD-1/TR. 2

EXAMPLE 2-13. R. Strauss, *Also sprach Zarathustra*, at [27]

In a passage where a composer wants only half the section to play, the part should be marked "half" (in Italian, *la metà*; French, *la moitié*; German, *die Hälfte*). The inside players (those sitting on the left-hand side of the stand) will then remain silent during such a passage. When all are to play again, the word "all" (or *tutti* [It.], *tous* [Fr.], *alle* [Ger.]) must appear in the score.

VIBRATO

Most string performers will use *vibrato* to enhance the beauty of a tone that is sustained for any length of time. Vibrato is accomplished by pressing the finger firmly on the string at the desired pitch while quickly rocking it back and forth on the string. Vibrato also increases the intensity of the pitch without distorting the essential frequency. A composer or orchestrator may ask for *non vibrato*, or *senza* (without) *vibrato*, if a white, pale sound is desired. For obvious reasons an open string cannot have a fingered vibrato, but it can be made to sound as if it were vibrating in either of two ways: by fingering (oscillating) the note one octave higher on the next higher string to set up sympathetic vibrations (which is obviously not possible when the note in question is played on the highest string); or by vibrating the same pitch on the next lower string. The first technique can only be produced on the lower three strings, the second only on the upper three strings.

GLISSANDO AND PORTAMENTO

Glissando

CD-ROM
CD-1
GLISSANDO

This is another technique common to all string instruments. It is accomplished by sliding one finger on one string from one pitch to another. It is usually indicated by a line connecting two noteheads with or without the word *glissando* (*gliss.*) above the line. When it is done correctly, the glissando is executed in one long (legato) bow stroke, and all the pitches will sound, or at least be touched, between the first and last notes. It is possible to slide upward as well as downward on a string.

Here are two famous examples of the use of glissando in an orchestral passage:

EXAMPLE 2-14. Ravel, *La Valse*, at [30]

CD-1/TR. 3
INDEX 1/0:00

Mouvement de valse viennoise
sur Sol
Vln. 1
mf espressif

EXAMPLE 2-15. Bartók, *Music for Strings, Percussion and Celesta*, second movement, 1 m. before [170]

CD-1/TR. 3
INDEX 2/0:13

♩ = 138
pizz. arco III* pizz. arco pizz.
Vln. 1
mf *f* *mf* *f* *p*

*to be played on the third, the D, string.

Portamento

In many scores the indication *port.* (for *portamento*) occurs where *gliss.* would normally be used to indicate a conscious slide from one pitch to another. *Portamento*, however, constitutes a more natural, expressive method of connecting melody notes that are a great distance apart, and this effect is rarely indicated in the score. When *port.* is found in the score it signifies to the performer to create a minimal slide between the two pitches, whereas *gliss.* usually directs the player to execute the slide with a full volume of sound.

Glissando on More Than One String

If a glissando is to be performed over more than one string, it cannot be a "true" glissando, for the sliding motion must be broken as soon as the open string is reached and then continued on the next string until the desired pitch is attained.

EXAMPLE 2-16. Mahler, Symphony No. 10, first movement, mm. 151–152

CD-1/TR. 4

Tempo adagio
151
Vln. 1
f
gliss.

Fingered Glissando

One other kind of glissando, called "fingered glissando," is found most often in solo literature or in string solos within an orchestral work. It is sometimes called the "written-out glissando," because every pitch is notated and is meant to be performed as written, as in Example 2-17. When played by the full string section, passages such as this will sound much more like a blurred glissando.

CD-1/TR. 5

EXAMPLE 2-17. Mahler, Symphony No. 7, second movement, 2 mm. before [92]



ADDITIONAL PASSAGES FOR STUDY

Bartók, *The Miraculous Mandarin*, first part
Debussy, *Ibéria*, part 2, at [38]
Mahler, Symphony No. 4, third movement, mm. 72–76 (glissando on more than one string)
Ravel, *La Valse*, 3 mm. before [27] (glissando on more than one string)
J. Schwantner, *Aftertones of Infinity*, mm. 18–24
R. Strauss, *Till Eulenspiegel*, mm. 205-209 (fingered glissando)

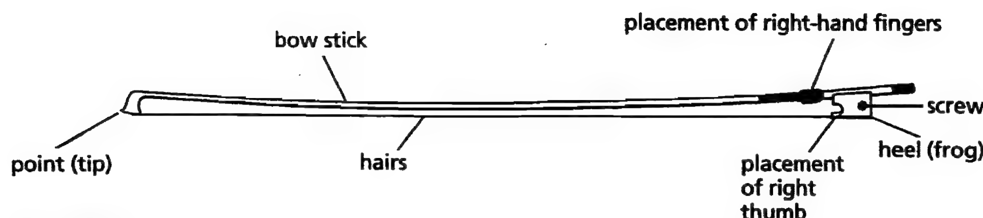
THE BOW

The bow, with which violin-family instruments are played, derives its name from its initial resemblance to the bow used in archery. We find even today Arab and Far Eastern fiddles that are still played with curved bows, similar to those used on European string instruments until the sixteenth century. For the next three hundred years or so, various experiments in Europe brought the shape of the bow closer to what we know today. Corelli, Vivaldi, and Tartini still used bows that were slightly curved outward, away from the hair. The bow's final form—curved inward—was achieved in the bows of François Tourte (1747–1835). These bows, as well as modern bows, have the following parts:

1. A long, tapering *bow stick*, which is curved slightly inward toward the hair. It is usually made of Pernambuco wood.
2. A metal or ivory plate protecting the tip.
3. Horse-tail hair.
4. A metal ferrule (brace) at the frog that encircles the hairs and keeps them evenly spread.
5. A metal screw with which the hair is tightened or loosened.

The tension of the hair is of the utmost importance. When the hair is tightened, the elastic quality of the wood gives the entire bow a resilience that makes it possible to execute any kind of stroke desired.

The specific measurements are proportional so that the bow is balanced toward its middle, allowing for greater agility and control, as well as richer tone quality. The bow is held firmly but flexibly between the four fingers and thumb



THE BOW

in the right hand. There are other bow hand positions, especially for the cello and the double bass, and we shall examine these in detail when we discuss these two instruments in Chapter 3.

BOWING

Bowing refers to the act of drawing the bow across the string. The bow is normally drawn across the string midway between the end of the fingerboard and the bridge. But to alter the sound of the instrument, the player may draw the bow across the string at different places.

Two symbols must be remembered: ⊓ for down-bow, drawing the bow from the frog toward* the tip; V for up-bow, drawing the bow from the tip toward the frog.

A passage on any of the string instruments may be bowed effectively in a variety of ways, and even the most experienced players often disagree on exact bowings. Even today, concertmasters and conductors introduce new bowings for well-established works. Bowing decisions are greatly influenced by the style of the music, its character, and the tempo and dynamics at which a particular work or passage is to be performed.

The composer or orchestrator should keep the following bowings in mind, for these, at least, are constant.

Non legato

CD-ROM
CD-1
NON LEGATO

In a passage with no notated slurs (*non legato*), each pitch is performed by changing the direction of the bow, whether the passage is slow or fast.

EXAMPLE 2-18. Elgar, *Pomp and Circumstance* No. 1, trio

CD-1/TR. 6



Even though changes of bow direction occur for each of the notes above, a listener does not necessarily perceive these changes since skilled performers can play the successive notes without an audible break between the up- and down-bows.

*The performer does not always use the whole bow (all the way from the frog to the tip and vice versa).

CD-ROM
CD-1
LEGATO

Legato

Whenever a passage is slurred, all notes within that slur are performed on one bow, meaning that all are played in one bow direction. This is called *legato* playing. (*Legato* means "bound together.")

CD-1/TR. 7

EXAMPLE 2-19. Schubert, Symphony No. 5, second movement, mm. 1–8

Andante con moto

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Some general observations concerning bowing must be stated:

1. A performer will naturally begin an anacrusis, or upbeat, with an up-bow (V) unless the composer marks the upbeat with a down-bow sign (⊓).
2. A very common type of bowing instruction, two adjacent up-bows, occurs on the second beat of the first measure of Example 2-19; these are necessary to have a down-bow on the accented first beat of the next measure. The violinist will play the quarter-note E♭, then stop the bow movement ever so briefly (the dash under the note indicates separation) before playing the eighth-note E♭ while still in an up-bow motion.
3. When two vigorous articulations follow one another, two successive down-bows are called for, as in Example 2-20. Here, a down-bow and an up-bow are marked over the long note so that the following attack will be solid. The bow is changed almost immediately to up-bow and is then ready to give a *ff* attack on the triple stop.

EXAMPLE 2-20. Beethoven, *Coriolanus* Overture, mm. 276–286

CD-1/TR. 8

When this passage is executed well, the bow change will hardly be noticed.

4. A performer can play louder and heavier toward the frog of the bow than toward the tip, because the pressure from the right hand holding the bow is much greater at the frog. Therefore, the most effective way to produce a crescendo is with an up-bow, due to the right hand's ability to increase the pressure on the bow toward the frog. Conversely, diminuendos are often performed with a down-bow.

   When bowing a passage, the composer should be aware of these tendencies and, without overmarking the parts, should indicate bow direction only where he or she wishes to counteract the normal habit of the players.

5. One should never mark long phrase slurs in string parts. Such slurs only confuse the performer. The only slurs that should be used are those that designate the notes to be performed on one bow (legato).

   There is a limit to how many notes can be played slurred on a single bow stroke. This is largely determined by the tempo and the dynamics governing a particular passage. In a fast but soft passage, a great many notes may be slurred together.

EXAMPLE 2-21. Mendelssohn, Symphony No. 4, first movement, mm. 378–388

CD-1/TR. 9

A similar passage in the violas some measures later shows only six notes on a bow, since the dynamic is forte.

EXAMPLE 2-22. Mendelssohn, Symphony No. 4, first movement, mm. 461–464

CD-1/TR. 10

In slow passages, even if the dynamic is soft, special caution must be taken not to overload the bow and thereby make the music physically impossible to perform. This is especially crucial for cellos and basses, whose bows are a bit shorter than those of the violin and viola. For instance, the following passage is impossible to perform as the composer has marked, adhering to both the crescendo marks *and* the slurs, unless, starting at the end of measure 30, it is broken up into several bows.

EXAMPLE 2-23. Liszt, *Les Preludes*, mm. 30–34

Examples 2-24 and 2-25 give two possible solutions. By dividing the section and staggering the bowing among the players, one can produce a very long and effective legato line, as Example 2-25 demonstrates.

CD-1/TR. 11
INDEX 1 / 0:00

EXAMPLE 2-24. Liszt, *Les Preludes*, mm. 30–34, possible bowing

CD-1/TR. 11
INDEX 2 / 0:18

EXAMPLE 2-25. Liszt, *Les Preludes*, mm. 30–34, possible bowing

Besides the single bow stroke (*non legato*) and the slur (*legato*), there are various special types of bowings. Their execution depends greatly on the speed and dynamics of the passage, as well as on the style and character of the music. For many of these bowings, there is a great diversity of views about the meaning of each term used to describe the bowing and the manner in which the bowing is executed. Concerning the former, the terminology itself is not universally accepted, and quite often there are several names for a particular bowing in a

given language. We have chosen what we consider to be the safest way to classify these bowings, by dividing them into:

1. bowings in which the bow stroke remains on the string;
2. bowings in which the bow is made to bounce off the string.

SPECIAL ON-THE-STRING BOWINGS

Détaché (FR.)

This basic *non legato* bowing is performed on all bowed string instruments by changing the direction of the bow for each note (see also p. 17). Sometimes referred to as "separate bows," this stroke clearly articulates each pitch without necessarily accenting any one, unless the passage is marked specifically to do so. At a rapid tempo, the middle to upper third of the bow is usually used when performing this stroke forte or mezzo forte; to produce an even louder sound, the bowing is often executed at or near the frog.

EXAMPLE 2-26. Tchaikovsky, *Romeo and Juliet*, mm. 141–143

CD-1/TR. 12

Sometimes the composer asks that a passage be played at the tip, which produces a much lighter, more delicate sound. The marking for this effect is: at the point; *a punta d'arco* (It.); *à la pointe* (Fr.); *an der Spitze* (Ger.).

EXAMPLE 2-27. Bartók, *Concerto for Orchestra*, fifth movement, mm. 8–13

CD-1/TR. 13

Conversely, composers ask for a passage to be played at the frog to take advantage of the heavy stroke that can be produced there. The marking for this effect is: at the frog; *al tallone* (It.); *au talon* (Fr.); *am Frosch* (Ger.).

CD-1/TR. 14

EXAMPLE 2-28. Gluck, *Iphigenia in Aulis*, Overture, mm. 19–29

A very heavy and vigorous effect is commonly achieved using a series of down-bows. These can be played quite fast, with the bow raised between down-bows, and will most often be performed at the frog.

CD-1/TR. 15

EXAMPLE 2-29. Tchaikovsky, Symphony No. 6, third movement, mm. 108–112

Louré (FR.); *Portato* (IT.)

CD-ROM
CD-1
LOURÉ

This essentially legato bowing is accomplished by slightly separating the notes while the bow is being drawn across the string. It can produce a very expressive effect and is used often in accompaniments. This bowing is indicated by dashes under or over each of the noteheads, with slurs to designate the bow changes. We have added bowings in Example 2-30 to show how the passage is to be played. *Louré* is easily played with both up- and down-bows.

EXAMPLE 2-30. Handel, *Messiah*, "Comfort Ye," mm. 1–4 (tenor part not recorded on CD)

CD-1/TR. 16

Staccato

The word *staccato* is derived from the Italian word *staccare*, meaning to detach or separate. For bowed string instruments, it is best to use the term staccato to describe an on-the-string effect only. Staccato is indicated by placing a dot over or under the notehead and is most effectively performed at moderate to slow tempos for reasons that will be clarified below. Staccato passages can be played loud or soft, and may be performed in one of two ways. Notice the difference in the notation of these two modes of performance.

Separate Bow Staccato

CD-ROM
CD-1
SEPARATE BOW
STACCATO

This technique is effected by playing short, separate bow strokes (Examples 2-31 and 2-36).

EXAMPLE 2-31. Separate Bow Staccato*

CD-1/TR. 17

*Where no other attribution is given, the example is written by the author.

Because staccato bowing separates or leaves a space between the notes, this passage could sound approximately:

EXAMPLE 2-32. Separate Bow Staccato as Played



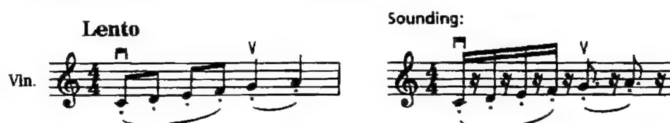
CD-ROM
CD-1
SLURRED
STACCATO

Slurred Staccato

This technique consists of the separation of a series of short notes on one bow (Examples 2-33, 2-34, and 2-35).

CD-1/TR. 18

EXAMPLE 2-33. Slurred Staccato



A *staccato* passage like the following is executed very much like *louré*—on one bow—except that the notes are shorter (staccato) and, therefore, the space between them is longer.

CD-1/TR. 19

EXAMPLE 2-34. Stravinsky, *Symphony in Three Movements*, second movement, at 135



Two other variations of the staccato on one bow are very common.

1. The notation ♩. ♪♩. ♪ or ♩. ♪♩. ♪ is usually performed:



Notice that in the actual notation the staccato dot is placed under the short note. If both notes were dotted, the long note would be measurably shortened in performance.

CD-1/TR. 20

EXAMPLE 2-35. Hindemith, *Symphonic Metamorphoses*, fourth movement, at A



2. In order to make ♪. ♬ sound crisp, light, and soft, the composer often does not use slurs but rather indicates that the passage be played with separate bows. In most cases these strokes would be executed at or toward the tip, with the long note on an up-bow. To make this playing technique absolutely clear to the performer, the composer may add dots above the sixteenth notes. In the following example, we have added up- and down-bowing indications to show how the passage would be played.

EXAMPLE 2-36. Weber, *Euryanthe*, Overture, 27 mm. after Tempo I: *Assai moderato*

CD-1/TR. 21



Notice that all the tempos for the staccato passages have been moderate, for a fast tempo will invariably be played off the string, with a bouncing bow. Such passages are not called staccato, but rather *spiccato* or *saltando*—both terms that will be discussed in the off-the-string section, below.

ADDITIONAL PASSAGE FOR STUDY

Stravinsky, *Orpheus*, "Pas de deux," at 109

Martelé (Fr.); *Martellato* or *Marcato* (It.)

CD-ROM
CD-1
MARTELÉ

The derivation of this term is from the verb "to hammer." In bowing, it indicates a fast, well-articulated, heavy, separate stroke, resembling a *sforzando*. *Martelé* can be performed with any part of the bow: at the tip, in the middle, or toward the frog. The bow does not leave the string, even though there is a stop between the notes and each new stroke is initiated with a heavy accent. Sometimes, instead of a simple dot, the composer places one of the following signs over a note: ▾ or ^ or >.

EXAMPLE 2-37. Bruckner, Symphony No. 9, second movement, mm. 52–58

CD-1/TR. 22

Lively
53
Vln. 1
Vln. 2
Vla.
ff

SPECIAL OFF-THE-STRING BOWINGS

Spiccato (IT.)

We have termed the three distinct ways of performing spiccato bowings. All depend on the speed and the dynamic of a particular passage.

CD-ROM
CD-1
CONSCIOUS
SPICCATO

Conscious *Spiccato*

In a slow or moderate tempo the player makes a conscious effort to make the bow bounce. The pressure of the right hand is reduced, and the wrist drops the middle of the bow on the string in a semicircular motion. The notation is similar to that for staccato: dots are placed above or beneath the noteheads. The lightness and speed required in the passage determine whether the player uses a conscious spiccato, as shown in Example 2-38, or a spontaneous spiccato, described below.

CD-1/TR. 23

EXAMPLE 2-38. Stravinsky, *Dumbarton Oaks Concerto*, first movement, at 22



CD-ROM
CD-1
SPONTANEOUS
SPICCATO

Spontaneous *Spiccato* (Called *Saltando*)

At a fast tempo the player does not have to make a conscious effort to lift the bow; rather, the short, quick up-down motion controlled by the wrist alone makes the bow bounce spontaneously off the string with every stroke.

CD-1/TR. 24

EXAMPLE 2-39. Rachmaninoff, *Symphonic Dances*, first movement, at 18



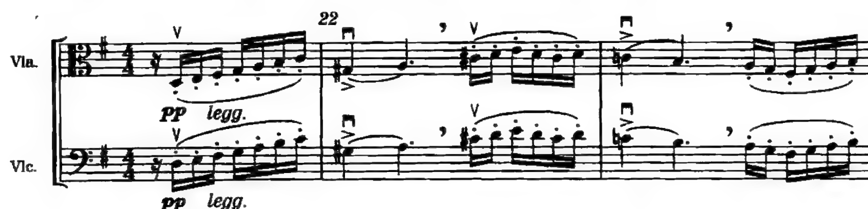
CD-ROM
CD-1
SLURRED
SPICCATO

Slurred *Spiccato*

The following example shows a short series of spiccato notes grouped together in a single bow.

CD-1/TR. 25

EXAMPLE 2-40. Mahler, Symphony No. 4, first movement, mm. 21–23



ADDITIONAL PASSAGES FOR STUDY

Beethoven, Symphony No. 1, second movement, mm. 154–156 (conscious spiccato)
Rossini, *William Tell*, Overture, mm. 336–343 (spontaneous spiccato)

Jeté (Fr.); *Ricochet* (Eng.)

CD-ROM
CD-1
JETÉ

The upper third of the bow is thrown on the string so that it will bounce, producing from two to six or more rapid pitches. *Jeté* is usually executed by a downward motion of the bow. However, it can be played up-bow as well.

A word of caution: the more notes desired on one bow stroke, the more impractical *jeté* bowing is. In an orchestral setting, we suggest that no more than three bouncing notes at a time be used in this bowing, even though solo players are perhaps capable of including many more well-articulated notes on a single bow. Since the bows of the cello and double bass are slightly shorter, three, or at most four, notes to a single *jeté* stroke are the limit of what can be played.

EXAMPLE 2-41. Rimsky-Korsakov, *Capriccio espagnol*, third movement, mm. 19–22 (violin solo only recorded)

CD-1/TR. 26

EXAMPLE 2-42. Shostakovich, Symphony No. 8, second movement, mm. 67–72

CD-1/TR. 27

ADDITIONAL PASSAGES FOR STUDY

Rimsky-Korsakov, *Capriccio espagnol*, fifth movement, mm. 89–96
Stravinsky, *The Firebird* ballet, from m. 30 on

CD-ROM
CD-1
ARPEGGIANDO

Arpeggiando

A slightly different kind of spiccato is related to *jeté*. This on-the-string bowing may begin with a simple slurring of an arpeggio played over three or four strings at a moderate tempo:

CD-1/TR. 28
INDEX 1 / 0:00

EXAMPLE 2-43. *Arpeggiando*



But at a fast tempo, the bow will spontaneously bounce off the string because of the motion of the right wrist, and an *arpeggiando* will occur naturally. This technique is used most often in solo string and chamber music literature, such as the solo violin passage in Example 2-44, but is also an effective orchestral device (as in the cadenza in the final movement of Rimsky-Korsakov's *Sheherazade*).

CD-1/TR. 28
INDEX 2 / 0:12

EXAMPLE 2-44. Mendelssohn, Violin Concerto, first movement, mm. 328–336



TRILLS AND OTHER COLORISTIC EFFECTS USING THE BOW

CD-ROM
CD-1
TRILL

Trills

As on all instruments, the trill is extensively used on all strings. Trills are executed by holding down the string of the pitch printed in the score with the appropriate finger and playing and releasing the next higher note with the adjacent upper finger as rapidly as possible for the entire value of the printed note. Performing a trill may involve the next higher or next lower note, as the composer specifies. If the trill is played on an open string, it is not so effective, because the quality of an open string is quite different from that of a stopped string. The performance of a trill by sixteen violins or ten violas creates an excitingly blurred rhythmic sensation, very different from the sound made by a single player on one instrument. The notation for the trill is *tr~~~~*, which is placed above the note.

EXAMPLE 2-45. Hindemith, *Mathis der Maler*, third movement, at 16

CD-1/TR. 29

Tremolos

There are two kinds of tremolo.

Bowed Tremolo

CD-ROM
CD-1
BOWED TREMOLO

A single pitch is repeated as often as possible during the length of the written note by means of short, quick up- and down-bow strokes. In Example 2-46, Verdi uses the tremolo to create a special, atmospheric effect.

CD-1/TR. 30

EXAMPLE 2-46. Verdi, Requiem, "Dies irae," mm. 46–51



Other uses of tremolo occur in works such as Bizet's *Carmen*, Berlioz's *Symphonie fantastique*, and Mendelssohn's G-minor piano concerto.

CD-ROM
CD-1
FINGERED
TREMOLO

Fingered Tremolo

An interval of a second or larger is quickly repeated, somewhat like a trill. The composer usually indicates a precise time value for each tremolo, although the notes within the tremolo are not measured. The notes to be alternated should be slurred together to insure the legato movement of the bow.

CD-1/TR. 31

EXAMPLE 2-47. Debussy, *La Mer*, first movement, at [8]



There are cases, however, where a fingered tremolo is bowed *détaché* rather than slurred; in those cases, of course, the slur is omitted.

ADDITIONAL PASSAGES FOR STUDY

Berlioz, *Symphonie fantastique*, first movement, at [5]
Bizet, *Carmen*, Overture, at Andante moderato
Debussy, *Nocturnes*, "Sirènes," at [1]
Dvořák, Cello Concerto, at 1, violas
Prokofiev, *Scythian* suite, at [40] (bowed tremolos in the violins and violas); at [43] (fingered tremolos in the violas)
Stravinsky, *The Firebird* ballet, beginning of the Finale

Measured Effects That Are Similar to Tremolos

Passages that are notated with slashes through the notes are not tremolos, since they are measured. This convenient shorthand notation should not be confused with actual tremolos. Example 2-48 gives the actual rhythmic values that are represented by the slashes; Example 2-49 shows this notation in an excerpt from the literature.

EXAMPLE 2-48. Measured Effect, Not a Tremolo



EXAMPLE 2-49. Wagner, *Der fliegende Holländer*, Overture, mm. 319–324

CD-1/TR. 32

319

Vln. 1

Vln. 2

322

Vln. 1

Vln. 2

A second measured effect that is often deceivingly like a tremolo consists of the undulation of two notes on adjacent strings, as shown in Example 2-50.

CD-ROM
CD-1
UNDULATING TREMOLO

EXAMPLE 2-50. B. Martinů, Symphony No. 1, first movement, one m. after [14]

CD-1/TR. 33

Moderato (♩. = 54)

Vln.

This technique may be performed slurred or detached.

Unusual Placements of the Bow

To vary the tone color, the bow may be drawn across the string at several different points, such as on the fingerboard or on the bridge. To change the color in a different fashion, the wood instead of the hair of the bow may be drawn over the string.

Sul tasto (IT.); *Sur la touche* (FR.); *Am Griffbrett* (GER.)

CD-ROM
CD-1
SUL TASTO

In order to obtain a rather flutelike, soft, and hazy tone, the composer may ask the performer to play with the bow on the fingerboard, as in the following example.

EXAMPLE 2-51. Debussy, *Ibéria*, part 2, at [40]

CD-1/TR. 34

♪ = 92
sur la touche *(espressif et doucement soutenu)*

Vlc.

When the term *flautando* is used instead of *sul tasto*, the player should play *near* but not *on* the fingerboard. The difference is really minimal, and many composers make no distinction between *sul tasto* and *flautando*.

ADDITIONAL PASSAGE FOR STUDY

Debussy, *Prélude à "L'après-midi d'un faune,"* mm. 96–98

CD-ROM
CD-1
SUL PONTICELLO

Sul ponticello (IT.); *Au chevalet* (FR.); *Am Steg* (GER.)

This effect is produced by playing very near or right on the bridge instead of between the fingerboard and the bridge, the regular space allotted for the bow stroke. Since this produces upper partials of a tone that are not usually heard, the pitch takes on an eerie, somewhat glassy timbre.

CD-1/TR. 35

EXAMPLE 2-52. Puccini, *Madama Butterfly*, Act I, 3 mm. before [38]



Sul ponticello is often combined with bowed or fingered tremolo.

ADDITIONAL PASSAGE FOR STUDY

R. Strauss, *Sinfonia domestica* (throughout)

CD-ROM
CD-1
COL LEGNO TRATTO

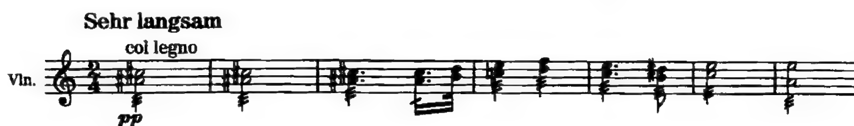
Col legno (IT.); *Avec le bois* (FR.); *Mit Holz* (GER.)

Two ways of playing with the wood of the bow are:

Col legno tratto. For this effect, the bow is turned over and the wooden stick is dragged across the string. Since the wood of the bow is less resistant to the string than the hair, the resulting sound is wispy and rather eerie. This technique is most useful for tremolo, as in Example 2-53, although sometimes it is used in legato passages.

CD-1/TR. 36

EXAMPLE 2-53. R. Strauss, *Also sprach Zarathustra*, at [12]



CD-ROM
CD-1
COL LEGNO BATTUTO

Col legno battuto. Here, the performer strikes the string with the wood of the bow. This effect is more commonly used than *col legno tratto*, and it, too, gives very little pitch definition, except in the extreme high and low registers, depending on which of the strings are struck. Its percussive sound resembles a very dry and short *spiccato*.

EXAMPLE 2-54. Berlioz, *Symphonie fantastique*, fifth movement, mm. 444–455

CD-1/TR. 37

Allegro
frappez avec les bois de l'archet
444
Vln. 1
frappez avec les bois de l'archet
Vln. 2
frappez avec les bois de l'archet
Vla.
(col legno battuta)
Vlc. 1
sf
pizz.
Vlc. 2
pp
pizz.
D.B.
pp

450
Vln. 1
Vln. 2
Vla.
Vlc. 1
Vlc. 2
D.B.

Every time a special effect, such as *col legno, col legno battuto,* or *sul ponticello* is used, you must insert the indication *normale, naturale,* or *in modo ordinario* in the score at the point where the player should resume normal bowing. The English word "natural" is sometimes substituted in American scores (for example, see those of Copland, Schuman, and Persichetti).

ADDITIONAL PASSAGE FOR STUDY

Mahler, Symphony No. 1, third movement, mm. 135–137

COLORISTIC EFFECTS WITHOUT THE BOW

Pizzicato

CD-ROM
CD-1
PIZZICATO

Another mode of producing pitches on string instruments involves plucking the strings. This playing technique, called *pizzicato,* is used quite frequently.

The normal procedure of playing pizzicato is as follows. The violinist or violist braces his or her thumb on the corner of the fingerboard and plucks the string with the index finger. The cellist or bassist simply plucks the string with his or her index finger, without anchoring the thumb. (Some violinists and violists have also adopted the nonanchored method.) During a pizzicato passage, the bow is usually held by the other three fingers against the palm of the right hand. However, if the entire piece or a lengthy section of it calls for pizzicato—particularly if that section is preceded by rests and followed by enough time to pick up the bow—the players may elect to put their bows in their laps or on the stands to give them more control in executing the plucking.

The thickness of the string and the size of the instrument greatly affect the volume of sound and the duration of the pitch that is plucked; double bass strings, due to their greater thickness, have the greatest sustaining power of all the strings of the violin family. The experienced player is aware of these effects and can better control what is specified in the score.

Whenever pizzicato is desired, the entire word, or the abbreviation *pizz.*, must appear in both the score and the parts. When the player is to resume playing with the bow, the word *arco* must be printed. To execute pizzicato, the player must take time to prepare to pluck and then to resume playing with the bow. Although there are instances in both solo and orchestral literature when no time is provided for either maneuver, these instances are rare, and this situation should be avoided if at all possible. The return to arco is more awkward than going from bowing to plucking because the hand must be repositioned at the nut of the bow for the normal playing position. It is much easier to change from arco to pizzicato if the bowing has been prefigured such that the players will have an up-bow stroke just before the pizzicato in order to arrive at the frog. They then have enough leverage on the bow to make the switch more quickly. If no time at all is allowed for the exchange of techniques, many players simply keep their bows in hand, extend the index finger, and pluck the string.

CD-1/TR. 38

EXAMPLE 2-55. Brahms, Symphony No. 1, fourth movement, mm. 1–17

Left-Hand Pizzicato

This effect is much more prevalent in solo literature and chamber music than in orchestral works. When a cross, +, appears above a note, the string is plucked with one of the fingers of the left hand. Often, these are open strings, and the little finger is used to pluck. At other times a whole series of pitches is to be plucked with the left hand. In that case, the finger that is held down to produce the highest pitch plucks the next highest pitch, and so forth, in the following manner:

EXAMPLE 2-56. Left-Hand Pizzicato

all pizz. notes with left hand

Here, the B is played with the bow *spiccato*, then the fourth finger plucks the A; the third finger, the G; the second finger, the F; the first finger, the open E string.

CD-1/TR. 39

EXAMPLE 2-57. Bartók, String Quartet No. 5, third movement, mm. 54–56

Snap or Fingernail Pizzicato

CD-ROM
CD-1
SNAP PIZZICATO

These two modes of playing pizzicato are twentieth-century innovations often associated with the works of Béla Bartók. The sign for the snap pizzicato is ⌽, and it is performed by snapping the string against the fingerboard. The sign must be placed above the note that is to be snapped. Fingernail pizzicato is indicated by a ◠, and is executed by pulling the string with the fingernail. In some scores, the term *pizz.* also appears with the special symbol, leaving no doubt as to how this effect should be performed. In many cases, however, *pizz.* does not appear, since the mode of playing is implicit in the snap or fingernail pizzicato sign.

CD-1/TR. 40

EXAMPLE 2-58. Bartók, String Quartet No. 4, fourth movement, mm. 56–63

Pizzicato Chords

CD-ROM
CD-1
PIZZICATO
CHORDS

When no preference is expressed by the composer or orchestrator (such as the term *non arpegg.*), the performer will strum a chord of three or four notes from the bottom up, creating an arpeggiated effect that can be held to a minimum by incisive, sudden finger strokes. In some cases, *non arpegg.* is specified. The pizzicato chord is performed in the following manner:

EXAMPLE 2-59. Pizzicato Chords

Sometimes the composer wants the chord played from top to bottom, or in the case of a repeated chord, alternating between bottom to top, top to bottom. In these cases, a directional sign ↑ ↓ is placed in front of each chord. Occasionally, the phrase *quasi chitarra* or *a la chitarra* is printed in the part and score, or arrows are placed above the chords.

EXAMPLE 2-60. Bartók, *Concerto for Orchestra*, fifth movement, mm. 5–9

CD-1/TR. 41

A word of caution must be added concerning endurance and speed. A long, fast pizzicato passage, played without rests, becomes very fatiguing for the performer. Some string players have perfected a technique of using the index and middle fingers alternately to facilitate a lengthy pizzicato passage. Nevertheless, occasional rests and alternation between first and second violins or violas and cellos helps alleviate any physical discomforts of the players. Here is an example of a successful lengthy pizzicato passage from the orchestral literature; notice the periodic rests that are interspersed:

CD-1/TR. 42

EXAMPLE 2-61. Tchaikovsky, Symphony No. 4, third movement, mm. 1–17

For additional pizzicato examples, see the pizzicato movements of Britten, *A Simple Symphony*; Foote, Suite for Strings in E; and Debussy, *Ibéria*, part 3.

Pizzicato is similar to staccato and spiccato bowing in that the sound dies away quickly. To indicate that a pizzicato note is to sound as long as possible, composers sometimes write pitches with indeterminate slurs following them and signal a long, "sustained" *pizz.* with the phrase "let vibrate," *vib.*, or *l.v.*

EXAMPLE 2-62. D. Diamond, Symphony No. 4, second movement, m. 1

CD-1/TR. 43

MUTES

CD-ROM
CD-1
MUTING

Con sordino (IT.); *Avec sourdine* (FR.); *Mit Dämpfer* (GER.)

All string instruments can be muted. The designation most often used when a mute is called for is *con sordino* ("with mute"). At that point in the score, the player places a small plastic, wooden, or metal object on the bridge, thus absorbing some of the vibrations and obtaining a very soft and smooth sound. When a mute is used, the tone quality is radically altered, and although most muted passages are soft, it is possible to write forte or fortissimo portions of a work for muted strings. The loud muted passage takes on a special quality of restraint and a sound that is more constricted, tenser. The composer or orchestrator should listen carefully to both soft and loud muted passages to recognize and appreciate this peculiar sound.

EXAMPLE 2-63. Weber, *Oberon*, Overture, mm. 13–21

CD-1/TR. 44

Senza sordino (It.); *Sans sourdine* (Fr.); *Ohne Dämpfer* (Ger.)

A special word of caution must be stated in connection with the muting and unmuting of strings: enough time must be allowed so that players can put on or take off the mutes quietly. Some players now use clips that easily slide to the back of the bridge or that attach to it easily. But others still use the older mutes, which need to be placed on the bridge, removed from it, and put away, all of which takes considerably more time to accomplish.

At all times the player must be careful not to divert attention from the music when mutes are put on or taken off. This is especially so in soft passages, as in Example 2-63 above, where the violins must take off their mutes over the violas' softly held notes.

SCORDATURA

The open string of all string instruments can be altered in pitch to create certain coloristic effects or for other practical considerations. This is called *scordatura*, an Italian term meaning mistuning. Each string may be tightened or loosened to produce a pitch other than that of the normal tuning. Scordatura tuning has been used since the seventeenth century to facilitate the playing of difficult passages in remote keys, to obtain unusual chords, and to change the tone color of the instrument. When a scordatura tuning is required, the composer or orchestrator must indicate the tuning of the four strings in both the score and parts either at the beginning of the piece or at the point in the work when the retuning is necessary. Plenty of time must be allowed after the scordatura passage is over if the player is to return to the original tuning, which is signaled by the word *accord* or *accordatura*.

Here are some examples of famous scordatura passages:

CD-1/TR. 45

EXAMPLE 2-64. Saint-Saëns, *Danse macabre*, tuning and mm. 25–32

(The "o" here stands for the open string.)

EXAMPLE 2-65. Mahler, Symphony No. 4, second movement, mm. 6–18*

CD-1/TR. 46

In gemächlicher bewegung

Tuning

Ohne hast

Vln. solo

EXAMPLE 2-66. Stravinsky, *Le Sacre du printemps*, last measure

non arpeggiato

Descendez le "la" un demi-ton plus bas

Vlc.

At the end of Stravinsky's *Le Sacre du printemps*, the composer asks the cellos to lower the A string to G♯ so that the final chord can be played. This chord could not be executed if this scordatura were not asked for.

In the Mahler example, scordatura is used coloristically to make the violin sound like a "cheap fiddle"; the straining of all four strings caused by raising each a whole tone removes much of the noble sound we usually associate with the instrument. Scordatura is used much more today for similar reasons. In years past, however, it facilitated playing in difficult keys; for example, a viola would be retuned D♭–A♭–E♭–B♭ and its part written out in D major. This may be observed in the solo viola part of Mozart's *Sinfonia concertante* (K. 364) in E♭ major, where scordatura was thought to facilitate the performance. Another valid musical reason for the retuning is the increased tension on the string that gives the viola much greater brilliance.

HARMONICS

Armonici (It.); Harmoniques (Fr.); Flageolettöne or Flageolet (Ger.)

Up until now we have focused on pitches produced either on an open string or sounded by pressing the string tightly against the fingerboard with the finger. All string instruments are capable of two other ways of producing pitches. The first produces a series of pitches called the *natural harmonics*, the second, a series called the *artificial harmonics*.

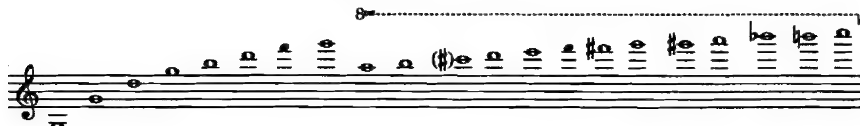
*The additional flats in the key signature are necessary to place the solo violin in the key of the rest of the orchestra, since all pitches must sound a minor second lower than notated.

CD-ROM
CD-1
NATURAL
HARMONICS

Natural Harmonics

Natural harmonics are pitches produced by touching a string lightly at various points called *nodes*,* along the string. On a G string the resulting pitches, called *harmonics* or *partials*, are as follows:

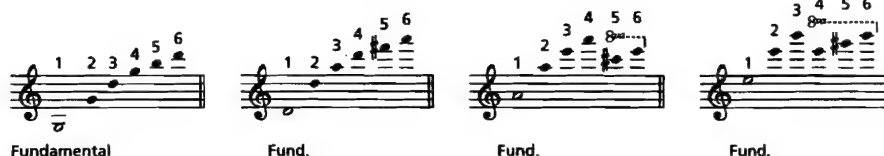
EXAMPLE 2-67. Harmonic series on G



Every pitch produced on any sounding body—whether a string or a vibrating air column—is a combination of the open string, called the *fundamental* or *first harmonic* (or *first partial*), and some overtones (second partial and higher). These notes are usually heard as a single or composite tone. The overtones give individual color or timbre to the fundamental and can be isolated from it on a string instrument by touching the string lightly at different nodes rather than by pressing the string firmly against the fingerboard. When the A string of a viola is lightly touched halfway between the nut and the bridge, for example, the string is prevented from vibrating as a whole. Its vibrating length is actually cut into halves, each sounding an octave higher than the pitch of the open string itself (in a ratio of 2:1). In theory it does not matter whether the bow is drawn across the string at the nut or on the bridge side of the node, since either half of the string gives the higher octave.

On the violin, the natural harmonics can be translated into the following notes:

EXAMPLE 2-68. Natural Harmonics



In Example 2-68, the first six partials (remember that the first is the fundamental) are given because they are the strongest and most successfully produced harmonics. Higher harmonics (up to the seventh or eighth partial) are quite easy to obtain on the viola, cello, and double bass, since the strings are longer and thicker.

Examples 2-69 through 2-72 show where on the lowest string of each string instrument the various natural harmonics can be produced:

1. First partial: The fundamental, of course, is played on the open string.
2. Second partial: Lightly touching the string halfway between the nut and the bridge will produce a pitch an octave higher than the fundamental.

*Nodes are the points of rest between vibrating (or oscillating) portions of a string. If the same node is touched firmly, the resulting pitch would be the same as that of the harmonic, but, of course, with a different timbre.

EXAMPLE 2-69. Natural Harmonics, Second Partial

Violin Sul G or IV | Viola Sul C or IV | Cello Sul C or IV | Double Bass Sul E or IV

3. Third partial: This partial can be produced in two different ways:
   a. Lightly touching the string one-third of its length from the nut or the bridge.
   b. Lightly touching the string two-thirds of its length from the nut or the bridge.

EXAMPLE 2-70. Natural Harmonics, Third Partial

Violin Sul G | Viola Sul C | Cello Sul C | Double Bass Sul E

4. Fourth partial: This partial can be obtained in two different ways:
   a. Lightly touching the string one-fourth of its length from the nut or the bridge.
   b. Lightly touching the string three-fourths of its length from the nut or the bridge.

EXAMPLE 2-71. Natural Harmonics, Fourth Partial

Violin Sul G | Viola Sul C | Cello Sul C | Double Bass Sul E

5. Fifth partial: This partial may be produced in four different ways, but only options a, c, and d (circled in Example 2-72) are secure enough to employ for orchestral use. Options b is used mainly in solo and chamber music.
   a. Lightly touching the string one-fifth of its length from the nut (or four-fifths from the bridge).
   b. Lightly touching the string two-fifths of its length from the nut (or three-fifths from the bridge).
   c. Lightly touching the string three-fifths of its length from the nut (or two-fifths from the bridge).
   d. Lightly touching the string four-fifths of its length from the nut (or one-fifth from the bridge).

EXAMPLE 2-72. Natural Harmonics, Fifth Partial

Violin Sul G | Viola Sul C | Cello Sul C | Double Bass Sul E

Notation of Natural Harmonics

As can be seen in Examples 2-69 through 2-72, two methods are used to notate harmonics:

1. A small circle over the note intended to sound as a harmonic; or
2. A diamond-shaped note at the pitch where the node producing the desired note can be found on the string.

Notice that in the examples given above, the string on which the various harmonics are to be reproduced is specified. That is because some pitches of the harmonic series on one string are duplicated on another. For example, on the violin, the pitch could be produced as a harmonic on the G as well as D string. Therefore, the string on which the pitch should be obtained must be specified. If it is to be on the G string, the term *sul G* should be used; or, for those who wish to designate the strings by roman numerals, IV (the lowest string). The following chart gives the roman numerals for each string on the four instruments of the violin family:

NOMENCLATURE OF THE STRINGS

Violin	*Viola*	*Cello*	*Double Bass*
I = E	I = A	I = A	I = G
II = A	II = D	II = D	II = D
III = D	III = G	III = G	III = A
IV = G	IV = C	IV = C	IV = E

The following chart shows the various ways of notating harmonics up to the fifth partial on all open strings; the small noteheads above the diamond-shaped notes indicate the resulting harmonics. We also provide partials six through ten for the bass, since those partials are possible to produce on this instrument. Since the third, fourth, and fifth harmonics can be notated in at least two ways—the fifth harmonic actually in four—all are shown here.

QUICK REFERENCE TABLE OF NATURAL STRING HARMONICS
PRACTICAL FOR ORCHESTRAL SCORING

Violin

2 3 4 5

On the E string — open — or — or — or — or — or

On the A string — open — or — or — or — or — or

On the D string — open — or — or — or — or — or

On the G string — open — or — or — or — or — or

Viola

2 3 4 5

On the A string — open — or — or — or — or — or

On the D string — open — or — or — or — or — or

On the G string — open — or — or — or — or — or

On the C string — open — or — or — or — or — or

Cello

2 3 4 5

On the A string — open — or — or — or — or — or

On the D string — open — or — or — or — or — or

On the G string — open — or — or — or — or — or

On the C string — open — or — or — or — or — or

Double Bass

2 3 4 5 6 7 8 9 10

On the G string — open — or — or — or — or — or

On the D string — open — or — or — or — or — or

On the A string — open — or — or — or — or — or

On the E string — open — or — or — or — or — or

CD-ROM
CD-1
ARTIFICIAL
HARMONICS

Artificial Harmonics

Artificial harmonics produce the flutey, silvery sound that is characteristic of natural harmonics, but involve manipulations of the fingers beyond simply lightly touching the open string. The most practical way of producing artificial harmonics is by lightly touching the node the interval of a 4th above a pitch that is stopped by another finger, and we suggest that this method be adopted for orchestral performance. On the violin and viola, the player stops a pitch with the first finger and simultaneously lightly touches the node a 4th above with the fourth finger. This produces a pitch two octaves above the stopped pitch. On the cello, an artificial harmonic can be effected by using the thumb to stop the string and the third or fourth finger to touch the node a 4th above. Since artificial harmonics on the double bass are hard to produce, we do not recommend their use—even though some contemporary composers have called for them in solo music. The necessary stretch of the bassist's hand makes it practically impossible to play them cleanly. Other methods of producing artificial harmonics on the violin and viola, which are used in solo and chamber works, will be discussed in the next chapter in sections devoted to those instruments.

Notation of Artificial Harmonics

1. A normal note with a diamond-shaped note a 4th above it.

EXAMPLE 2-73. Notation of Artificial Harmonics



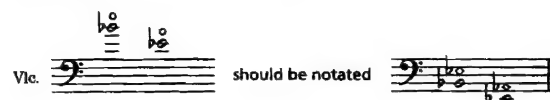
2. A normal note with a diamond-shaped note a 4th above, plus the actual intended note added above in parentheses.

EXAMPLE 2-74. Notation of Artificial Harmonics



3. A small circle above the note that is actually heard as a harmonic. This manner of notation is chancy, for the orchestrator should be responsible for indicating the method of producing the harmonic (that is, touching a 4th above the stopped note) rather than the performer.

EXAMPLE 2-75. Notation of Artificial Harmonics



A question often asked is how high one can or should write artificial harmonics. Although theoretically there is almost no limitation, practically, there is a reasonable limit, especially for orchestral use, as shown in Example 2-76. Artificial harmonics higher than these are insecure and often do not speak.

EXAMPLE 2-76. The Highest Practical Artificial Harmonics



Representative Passages from the Literature

Here are three extended passages that employ harmonics:

EXAMPLE 2-78. Debussy, *Ibéria*, part 1, at [15]

CD-1/TR. 48



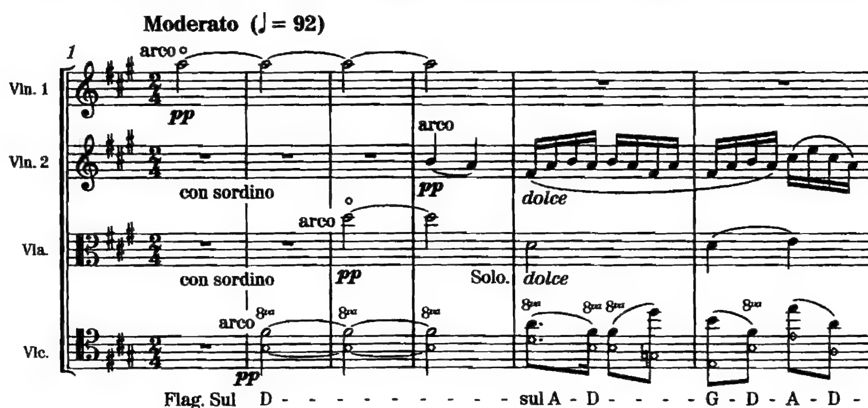
EXAMPLE 2-77. Saint-Saëns, Violin Concerto, second movement, end (last 13 mm. only heard on recording)

CD-1/TR. 47



EXAMPLE 2-79. Borodin, String Quartet No. 1, third movement, Trio, mm. 1–20

CD-1/TR. 49



ADDITIONAL PASSAGES FOR STUDY

Barber, *Medea*, "Dance of Vengeance," at [31]

Berg, *Wozzeck*, Act I, Scene 2, just before [230], and Act III, Scene 5, 1 m. before [380]

Copland, Symphony No. 3, second movement, mm. 100–106 (first violins); see also Example 3-18

Ravel, *Shéhérazade*, 3 mm. after [5]

Rimsky-Korsakov, *Sheherazade*, second movement, *Vivace scherzando*

Schoenberg, Violin Concerto, first movement, mm. 212–225 (extensive use in solo part)

Webern, Six Pieces for Orchestra, Op. 6, No. 5; see also Example 3-19
Webern, Five Pieces for Orchestra, Op. 10, second movement

CONTEMPORARY STRING TECHNIQUES

During the past forty years, a great number of innovations in string technique have been added to the vocabulary. There are so many modifications, in fact, that entire volumes are devoted to a discussion of these newer techniques. Here, it is only possible to mention some of the most important and codify in terms of notation those most commonly used. Such books as David H. Cope's *New Directions in Music* (McGraw-Hill), Gardner Read's *Contemporary Instrumental Techniques* (Schirmer Books), and Kurt Stone's *Music Notation in the Twentieth Century* (W. W. Norton) can be consulted for a more complete discussion of these techniques.

Some of the most important contemporary innovations in string technique are the following. The notational signs included in this list are those most commonly used*:

1. Playing on the wrong side of the bridge—that is, the tailpiece, not the fingerboard

   playing all four strings behind the bridge

   three strings

   two strings

   one string only

   One can also play *col legno* behind the bridge.
2. Playing the tailpiece with the bow hair or striking it with the wood of the bow . (If the performers are to strike the tailpiece with the wood of the bow, the word *battute* should precede the passage.)
3. Knocking, rapping, or tapping on the body of the instrument either with one's fingers or knuckles. This is usually requested on the score in a foot note and further explained there. Usual notation:
4. Performing wide vibratos, as represented by the notation:
5. Bowing on a harmonic node with great pressure in order to produce notes well below the open string of the instrument (called subharmonics or undertones).
6. Playing, in any mode specified, the highest note on a particular string Sul G (here on the G string); or if this sign is used without designating a string, simply playing the highest note on the instrument.

*For an excellent example of practical guidance regarding the use of new notation in an orchestral score, see Example 5-32a, p. 149.

7. Fingering a passage without drawing the bow across the strings, as in Foss's *Time Cycle*, second movement (1 measure before 95). This gives a quiet, ghostly sound, with almost inaudible pitches and the slight sound of the fingers slapping down on the strings.
8. Executing pizzicatos with plectrums or hair combs.
9. Playing half harmonics by either touching the string lightly not at a harmonic node or touching it more firmly than usual at a harmonic node. This effect sounds somewhat like *sul tasto*.

   Many harmonics that have been considered unplayable on the double bass are now being performed in solo and chamber music literature, but they would be dangerous to use in orchestral writing.
10. Bowing near the nut rather than the bridge "on the wrong side of the left hand" in order to produce a viol-like sound. This technique is typical of George Crumb and some other recent composers. The fingering, of course, would be reversed; Crumb even asks that the beginning pitch be marked on the fingerboard with a chalk mark. This effect is required in his *Black Angels*, a work for amplified string quartet. It should not be casually used in orchestral works, however, because few players would be able to produce it.

When any of these devices is used in an orchestral score or, for that matter, anywhere in a work, whether solo, chamber, or orchestral, a verbal description of the desired sounds, as well as the exact technique by which the sounds may be realized, must be included in the score. In the interest of maximum communication between composer and performer, we suggest that the procedures outlined in Kurt Stone's *Music Notation in the Twentieth Century* be adopted.w

3

Individual Bowed String Instruments

Violin

Violino (It.); Violon (Fr.); Violine or Geige (Ger.)

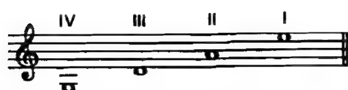
The violin is the soprano instrument of the string section. It is held on the left shoulder, supported by the left side of the chin, and held from underneath by the left arm and hand at the instrument's neck. All techniques and coloristic effects discussed in Chapter 2 are within the scope of this most versatile instrument.



Zvi Zeitlin, Violin

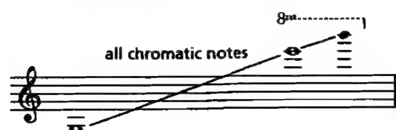
Tuning, Range, and Fingering

EXAMPLE 3-1. Tuning



All music for the violin is written in the treble clef. The roman numerals above the staff in Example 3-1 give the nomenclature for each string used by string players. Notice that the uppermost string is I.

EXAMPLE 3-2. Range



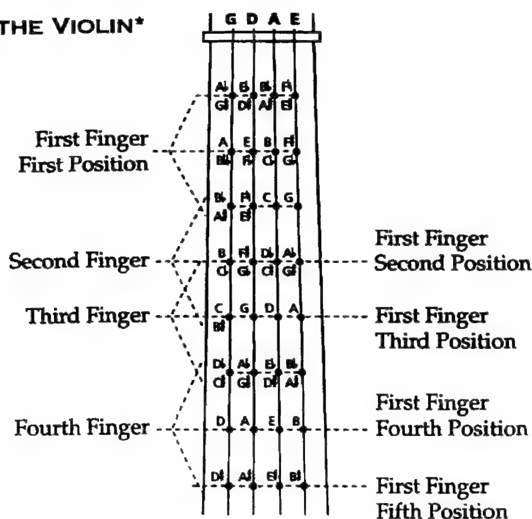
The practical orchestral range of the violin (not using harmonics) extends from G^3 to E^7, but in solo or chamber music playing, B^7 or even higher is possible. It must be kept in mind that the extremely high range on any string instrument is difficult to control, and only in the past one hundred fifty years has it been used extensively. During the Classical period, the limit of the violin range was A^6 ( ). Beyond the seventh position, in which that A is the highest note, the spaces between the fingers become progressively smaller, making left-hand control more and more tenuous as the thumb, which acts as a stabilizing lever on the neck and body of the instrument, loses its hold. The hand must therefore seek the higher notes without the orientation of the thumb's position.

CD-ROM
CD-1
FINGERING/
SHIFTING
ON THE VIOLIN

Fingering

The fingering for the first five positions on the violin is as follows:

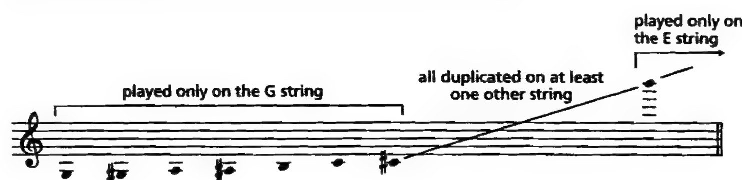
FINGERING ON THE VIOLIN*



*Dotted lines on the left of the diagram indicate half positions—that is, alternative fingerings used mostly in first position to perform chromatic or whole-tone passages, or those based on synthetic scales, more easily.

Notice that from the open G to C♯^{4}, and then from B^6 up, the pitches are available on one string only. Starting with D^4 each pitch may be played on more than one string.

EXAMPLE 3-3. Fingering for First Five Positions



D^4, for instance, can be played on the open string or with the fourth finger on the G string in first position. It can also be performed with the third finger on the G string in second position, the second finger on the G string in third position, or the first finger on the G string in fourth position. It would be futile, then, to specify where the violinist is to play a particular pitch when it can be duplicated in many places on the instrument. If the composer or orchestrator is very familiar with the fingering of the instrument, he or she may wish to indicate a certain fingering in the score and parts to achieve a desired timbre. Except under special circumstances such as this, the actual fingering is best left to the performer.

Let us examine what we mean by timbral considerations. The open strings have a distinctive sound of their own. They have greater vibrating potential, since they are not under the controlling influence provided by the finger, which presses and oscillates on a string to produce a stopped note with vibrato. In a fast passage the combination of open and stopped strings may not sound jarring, but in slow, expressive passages, one usually wants all the tones to have the same timbre, otherwise the notes that are played on the open strings can stand out peculiarly. But this effect is sometimes exploited, as in the Brahms melody in Example 3-4, in which all notes are played on the G string. Here, listen to the vibrant sound that the open G string creates.

EXAMPLE 3-4. Brahms, Symphony No. 1, fourth movement, mm. 61–75

CD-1/TR. 50



Passages Performed Exclusively on a Single String

We will now focus on the particular properties and sound qualities of each of the violin's four strings. It is virtually impossible to describe the many shades of sound that the violin can produce; it is far more effective to illustrate this almost unlimited potential throughout the violin's entire range with numerous examples from the literature. Suffice to say that if one wishes to have a passage

performed on one string exclusively, the passage should be marked *sul* plus the string name, such as *sul E, sul A, sul D*, or *sul G*. (The French, however, prefer to use roman numerals, as in Example 3-1.) This practice should be followed for any instrument of the violin family.

The G String

The G string is the thickest and most sonorous of the four violin strings. As the player moves into higher positions on it, the sound becomes very intense because the vibrating portion of the string is constantly being shortened.

CD-1/TR. 51

EXAMPLE 3-5. Tchaikovsky, Symphony No. 5, second movement, mm. 111–119

ADDITIONAL PASSAGE FOR STUDY

Mahler, Symphony No. 3, first movement, mm. 5–8.

The D String

The quality of this string's sound is probably the least distinctive of the four strings. Yet it can exude warmth and lyricism, as in the passage shown in Example 3-6. Its sound mellows even more in its higher positions as its vibrating length is shortened.

CD-1/TR. 52

EXAMPLE 3-6. Rimsky-Korsakov, *Sheherazade*, third movement, mm. 1–8

The A String

The characteristic sound of the A string is most striking in first position; it loses some of its brilliance and power in the upper positions, which are better suited to soft, lyrical passages. If brilliance in the upper registers is desired, the player should be directed to cross to the E string for the rest of the passage.

CD-1/TR. 53

EXAMPLE 3-7. Puccini, *Madama Butterfly*, Act II, at 16

ADDITIONAL PASSAGE FOR STUDY

Brahms, Symphony No. 3, third movement, mm. 13–24

The E String

This is the most brilliant of the four strings. Notice how luminous it becomes at the top of its range.

EXAMPLE 3-8. R. Strauss, *Don Juan*, mm. 9–17

CD-1/TR. 54



One can also elicit a quiet, mysterious quality from this string when playing at a soft dynamic.

EXAMPLE 3-9. Prokofiev, *Classical Symphony*, second movement, mm. 5–13

CD-1/TR. 55



Multiple Stops

CD-ROM
CD-1
MULTIPLE STOPS ON THE VIOLIN

The multiple-stop technique has already been discussed in general terms for all string instruments. Although we focus specifically on double, triple, and quadruple stopping for the violin, it is important to emphasize that most difficult double stopping is reserved for solo and possibly chamber music. In orchestral writing, only the most easily accessible double stops are usually used, particularly for *secco* chordal effects or particularly sonorous passages. Since a conventional symphony orchestra has at least sixteen first violins and fourteen second violins, passages that would be quite difficult for one performer are quite simple when played *divisi*.

Examples 3-10 through 3-13 give a partial list of the double, triple, and quadruple stops on the violin. Some of these multiple stops are quite difficult to reach with small hands.

EXAMPLE 3-10. Double Stops

etc.

etc.

etc.

all chromatic

etc.

all chromatic pitches also

etc.

etc.

EXAMPLE 3-11. Chromatic Double Stops

etc.

etc.

etc.

EXAMPLE 3-12. Triple Stops*

etc.

*Remember that all string triple and quadruple stops are of necessity arpeggiated.

EXAMPLE 3-13. Quadruple Stops



Harmonics

In solo violin and some chamber music, composers have required the violinist to produce artificial harmonics in other ways than have been demonstrated in Chapter Two (pp. 46–48). But these alternate ways, given as options 2, 3, and 4 below, are seldom used in orchestral writing because they produce especially weak tones and are extremely risky to carry off. Since the first option given below is easiest to play, it is found most often in orchestral scores.

"Touch 4th" Harmonics

To review, the most practical way to produce artificial harmonics for orchestral writing is the "touch 4th" method, which results in a note two octaves above the fundamental (the fingered note in Example 3-14).*

*In the examples, 0 under a note designates an open string, and 1 indicates the first (left index) finger to finger the note.

EXAMPLE 3-14. "Touch 4th" Harmonics

Actual harmonics

Lightly touched note
Fingered note

"Touch 5th" Harmonics

The "touch 5th" harmonics produce a tone that is one octave and a perfect 5th above the fundamental.

EXAMPLE 3-15. "Touch 5th" Harmonics

Actual harmonics

Lightly touched note
Fingered note

"Touch Major 3rd" Harmonics

The "touch major 3rd" harmonics produce a pitch two octaves and a major 3rd above the fundamental.

EXAMPLE 3-16. "Touch Major 3rd" Harmonics

Actual harmonics

Lightly touched note
Fingered note

"Touch Minor 3rd" Harmonics

The "touch minor 3rd" harmonics produce a pitch two octaves and a perfect 5th above the fundamental.

EXAMPLE 3-17. "Touch Minor 3rd" Harmonics

Actual harmonics
Lightly touched note
Fingered note

Representative Passages from the Literature

Here are some successful orchestral passages using both natural and artificial harmonics.

EXAMPLE 3-18. Copland, Symphony No. 3, fourth movement, 3–8 mm. after 128

CD-1/TR. 56
INDEX 1 / 0:00

Allegro
Vln. 1
Vln. 2

EXAMPLE 3-19. Webern, Six Pieces for Orchestra, Op. 6, No. 5, mm. 20–26 (strings only)

CD-1/TR. 56
INDEX 2 / 0:17

rit. - - - - noch langsamer (♪ = ca. 60)
mit Dmpf.
verlöschend
(alle)
Solo
pp
Vln. Solo
Vln. 1
Vln. 2
Vla.
Vlc. 1
Vlc. 2

CD-1/TR. 56
INDEX 3 / 0:53

EXAMPLE 3-20. Stravinsky, *Le Sacre du printemps*, at 101 (strings only)

The Solo Violin

The violin has long been a favorite solo instrument of many composers. Almost every great master of orchestral music since the Baroque period has written violin concertos showcasing the tremendous range, versatility, and expressive possibilities of the instrument. Everyone should become acquainted with the

masterpieces in this genre by such composers as Bach, Mozart, Beethoven, Mendelssohn, Brahms, Dvořák, Tchaikovsky, Bruch, Lalo, Schoenberg, Berg, Stravinsky, Bartók, Prokofiev, Penderecki, and Rochberg, to name only a few.

The violin has also been greatly exploited as an occasional solo instrument within the orchestra. When one solo violin is called for, the concertmaster will play the part. When two soloists are required, the first stand of the first violins will be called on. Another arrangement would be for the composer to write one solo part for the first violin and another for the second violin, in which case the concertmaster and the principal second violinist will play. Some of the solo parts in the orchestral literature are quite virtuosic; therefore the principal players of all sections must be of solo caliber.

Here are two examples of solo violin passages from orchestral works. See also Example 2-41.

EXAMPLE 3-21. Brahms, Symphony No. 1, second movement, mm. 91–105

CD-1/TR. 57
INDEX 1 / 0:00

99

Fl. Ob. Cl. Bsn. Cbsn. Hn. Tpt. Timp. Vln. solo Vln. 1 Vln. 2 Vla. Vlc. D.B.

zu 2 — espress. — cre … scen … do — cresc. — arco — get.

CD-1/TR. 57
INDEX 2 / 1:15

EXAMPLE 3-22. R. Strauss, *Don Juan*, mm. 73–81

Andante

73 Vln. solo — *molto espress.* — *molto espress.*

78 — *dim*

ADDITIONAL PASSAGES FOR STUDY

Grofé, *Grand Canyon Suite*, "On the Trail," beginning (solo violin cadenza)
Respighi, *Feste romane*, third movement, 4 mm. after [25]
Rimsky-Korsakov, *Sheherazade*, first movement, at [C] (cadenza that recurs throughout the work; two other instances are in first movement, at [G], and second movement, beginning)
R. Strauss, *Till Eulenspiegel*, mm. 205–209

Other Violin Techniques

Skips

Even though the violin is a most versatile and agile instrument, the problem of fast, wide skips presents real difficulties. They can sound thrilling, especially if the skips are from the extreme low register to the extreme high register, but one must realize that a soloist can execute this sudden shift more accurately than a whole section. The difficulty is that the entire left-hand position has to be completely altered, and sometimes strings have to be crossed silently yet smoothly, or a very high note must follow an extremely low one on the same string. Most skillful players can give a fairly good impression of legato playing when performing a skip, even when there is a string intervening in the skip, but simply hitting the correct pitch can be difficult. Some of these difficulties are demonstrated in the following passages from orchestral violin parts. (Note that recordings are misleading, for when the section does not clearly articulate the skip, the passage is retaped until it is perfect.)

1. Wide skips on the same string:

EXAMPLE 3-23. Wagner, *Die Meistersinger*, Prelude, mm. 33–38 CD-1/TR. 58

Allegro 34 Vln. 1 cresc. *f* stacc. 36 e piu *f*

2. Wide skips between extreme ranges:

EXAMPLE 3-24. Bartók, *Divertimento*, first movement, mm. 50–52 CD-1/TR. 59

Fast 50 Vln. 1 *ff*

3. Wide skips played legato:

CD-1/TR. 60

EXAMPLE 3-25. Berg, *Lyric Suite*, fourth movement, mm. 10–14

Rather slowly 10 N Vln. 1 3 3 H 3 3 3 3 3 mf cresc. 13 3 3 3 molto pp

ADDITIONAL PASSAGES FOR STUDY

Wide Skips on the Same String:

Shostakovich, Symphony No. 5, first movement, mm. 51–62

Wide Skips between Extreme Ranges:

Copland, Symphony No. 3, fourth movement, mm. 2–4 after [96]
Prokofiev, *Classical Symphony*, first movement, second theme

Wide Skips Played Legato:

Stravinsky, *Agon*, Pas de deux, mm. 411–418

Chromatic Passages

Issues surrounding the fingering of chromatic passages should be mentioned here. All chromatic notes from the low G on the G string to the highest register can be produced easily on the violin. Usually, a player fingers a chromatic pitch using the same finger that normally plays the nonchromatic equivalent. For instance, in the following example notice that the finger that normally plays F is also used to play F♯.

EXAMPLE 3-26. Chromatic Scale Fingering

1 1 2 2 3 3 4 4 3 3 2 1—1

Sometimes the performer will choose not to risk the portamento that is inevitable if the chromatic scale is performed as in Example 3-26. In these instances the scale will be played in "half position," in which a different finger is used for every note.

EXAMPLE 3-27. Chromatic Scale in "Half Position"

0 1 2 1 2 3 4 0 4 3 2 1 2 1 0

same fingering on all strings

This method is most appropriate in fast passages, for it minimizes the audible shifting of the same finger.

VIOLA

Viola (IT.); Alto (FR.); Bratsche (GER.)

The viola is the alto voice of the string orchestra and its playing technique is similar to that of the violin. There are some issues to keep in mind when writing for viola. The most obvious is the size of the instrument. It is quite a bit larger than the violin, sometimes as much as three to four inches, and this means that the hand must stretch more to get the intervals in tune. The tension on the left hand is also greater, especially in the higher positions. There are variations in the size of violas, and experts do not agree on the ideal size for the most beautiful, characteristically dark-hued tone quality. Today, violists pick their instrument in proportion to the size of their left hand.

GEORGE TAYLOR, VIOLA



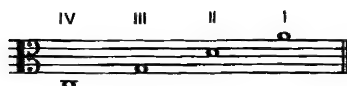
Of all the bowed strings, the viola has been the slowest to emerge into the consciousness of composers. Even though trills, bowings, harmonics, arpeggios, double, triple, and quadruple stops are just as successful on the viola as on the violin, this instrument has been undeservedly neglected by many great masters of the past. There may be two principal reasons for this:

1. The eighteenth-century masters rarely wrote for four independent string voices.
2. For a long time, most violists were converted violinists and did not always enjoy the full trust of composers.

Although Bach, Stamitz, and Mozart wrote occasional solo or concertante works for the viola, Berlioz was the first to give it a truly independent voice in orchestral writing.

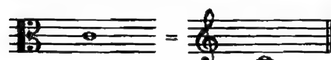
Tuning, Range, and Fingering

EXAMPLE 3-28. Tuning



Viola music is usually notated in the alto clef, but to avoid ledger lines, the upper notes are sometimes written in treble clef.

EXAMPLE 3-29. Viola Notation



EXAMPLE 3-30. Range



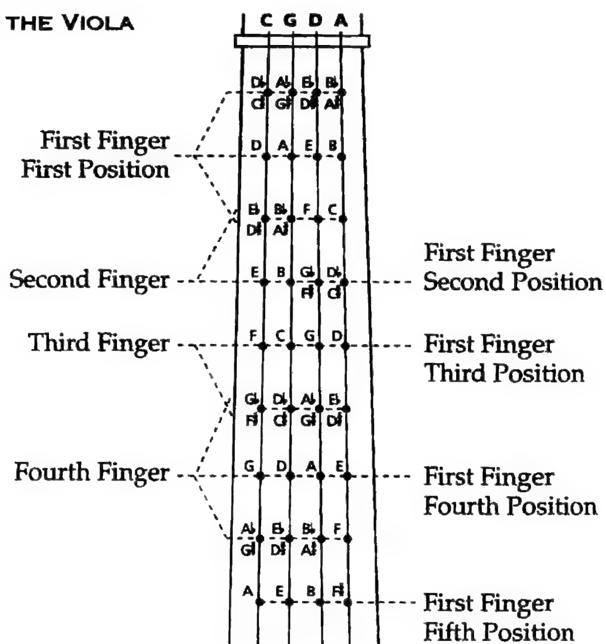
Let us observe some differences between the viola and the violin, which should help define its function in the orchestra.

1. The viola bow is slightly heavier than that for the violin.
2. The strings are thicker and more resistant to the bow, which necessitates a firmer stroke to produce a full sound. Lighter bowings are also possible but are more difficult to produce.
3. Harmonics are easier to play because the thicker strings produce them more reliably.

CD-ROM
CD-1
FINGERING/
SHIFTING
ON THE VIOLA

Fingering

FINGERING ON THE VIOLA



The fingering system is identical to that of the violin, and the same multiple-stop patterns are available on the viola, but lie a fifth lower. Similarly, all the points already discussed for the violin about half positions, chromatic fingerings, pizzicato, and other coloristic effects (pp. 63–65) apply equally to the viola.

Passages Performed Exclusively on a Single String

The C String

The only string of the four viola strings not found on the violin, it is considered to have the most characteristic viola sound. It has been described by the nineteenth-century Belgian musicologist-composer François Gevaert as "somber, austere, and sometimes even forbidding."

EXAMPLE 3-31. Hindemith, Sonata, Op. 11, No. 4, first movement, mm. 15–16

CD-1/TR. 61

The G and D Strings

Emitting the least characteristic viola sound, these two strings may be called the "accompaniment strings" because on these the violist performs the many accompanying figures composers have traditionally given this instrument. But they can also be exploited for their dark quality, as in the following passage:

EXAMPLE 3-32. Bartók, Concerto for Orchestra, fourth movement, mm. 42–51

CD-1/TR. 62

The A String

While not as brilliant as the E string on the violin, the A string is quite piercing and nasal in quality. It combines beautifully with woodwind instruments and, in some cases, doubles well with soft trumpets and trombones. Because of its carrying power, it has been used a great deal in solo viola passages.

CD-1/TR. 63

EXAMPLE 3-33. Hindemith, *Der Schwanendreher*, first movement, mm. 48–59

Multiple Stops

Examples 3-34 through 3-36 give a partial list of double, triple, and quadruple stops possible on the viola. Multiple stops can be performed *divisi* by the viola section of the orchestra, similar to those written for violin.

EXAMPLE 3-34. Double Stops

Examples of double stops on the G and D strings, as well as on the D and A strings, can be similarly constructed.

EXAMPLE 3-35. Triple Stops



Triple stops on the G, D, and A strings can be tabulated in the same manner as those on the C, G, and D strings. These triple stops are all played in first position.

EXAMPLE 3-36. Quadruple Stops



Representative Passages from the Literature

Here are some characteristic passages illustrating the sound of harmonics, pizzicato, double stops, and other coloristic effects on the viola. A passage that demonstrates the use of the viola as the bass of the string section occurs in Example 3-37; one that is typical of the many filler passages so common in the orchestral literature occurs in Example 3-38. An example that couples violins and violas in octaves is found in Example 3-39, and one that successfully couples violas and cellos in Example 3-40.

CD-1/TR. 64

EXAMPLE 3-37. Mendelssohn, *A Midsummer Night's Dream*, Overture, mm. 45–49

CD-1/TR. 65

EXAMPLE 3-38. Wagner, *Lohengrin*, Act III, "In fernen Land," mm. 12–19

EXAMPLE 3-39. Berlioz, *Symphonie fantastique*, first movement, mm. 155–159

CD-1/TR. 66

EXAMPLE 3-40. Beethoven, Symphony No. 5, second movement, mm. 1–10

CD-1/TR. 67

ADDITIONAL PASSAGES FOR STUDY

Hindemith, *Der Schwanendreher*, first movement, mm. 1–11
Stravinsky, *Le Sacre du printemps*, Part II, mm. 56–62
Tchaikovsky, *Romeo and Juliet*, mm. 114–116

The Solo Viola

The Baroque masters wrote many concertos for the viola, and some pre-Classical composers followed their lead. However, after that period, except for the *Sinfonia concertante* of Mozart for violin and viola (K. 364) and the solo part in Berlioz's *Harold in Italy*, little significant solo viola music appeared until Wagner and Strauss in the late nineteenth century. In the twentieth century, however, the viola achieved an almost equal status with its relatives in the bowed string group. Works such as Debussy's *Sonata for Flute, Viola, and Harp*, Bartók's and Walton's viola concertos, Hindemith's *Der Schwanendreher*, and Vaughan Williams's *Flos Campi* offer proof. Some wonderful examples of solo or concertante viola passages from the orchestral literature are the following:

EXAMPLE 3-41. Scriabin, *Poem of Ecstasy*, mm. 22–25

CD-1/TR. 68

CD-1/TR. 69

EXAMPLE 3-42. R. Strauss, *Don Quixote*, Variation 2, Vivace, mm. 1–19

Rather free

Vla. solo

mf

pp

lebhaft

f

espr.

p

mf

p

pp

CD-1/TR. 70

EXAMPLE 3-43. Stravinsky, *Le Sacre du printemps*, "Cercles mystérieux des adolescentes," at [91]

Andante con moto (♩ = 60)

6 Vla. soli

molto cant. ma non f

molto cant. ma non f

molto cant. ma non f

ADDITIONAL PASSAGES FOR STUDY

Berg, *Wozzeck*, Act I, Scene 1
Berlioz, *Harold in Italy*, first movement, mm. 38–68
Wagner, *Die Meistersinger*, Act II, Scenes 3 and 7, and Act III, Scene 5

Viola d'amore (It.)

Viole d'amour (Fr.); Liebesgeige (Ger.)

The viola d'amore has never been a regular member of the orchestra. There is continuing interest in using its characteristic sound in solo and chamber music, as well as in soloistic passages in larger works such as Bach's *St. John Passion* ("Erwäge, erwäge," measures 1–5) and several of his cantatas, Meyerbeer's *Les Huguenots* (Example 3-51), Massenet's *Le Jongleur de Notre Dame*, Pfitzner's *Palestrina*, and Loeffler's *La Mort de Tintagiles*. A viola d'amore accompanies the women's offstage chorus in Act II of Puccini's *Madama Butterfly*.

EXAMPLE 3-44. Usual Tuning



The principle on which the sound of this instrument is based is sympathetic vibration. Besides the seven strings that are bowed and fingered, seven sympathetic strings, made of steel wire, lie just above the belly of the instrument and directly below each of the bowed strings. The sympathetic strings are generally tuned in unison with the bowed strings.

In order to allow the sound of these sympathetic strings to be heard freely in keys other than D major, alternative tunings have been used. The most common alteration is to lower the F♯ string to F♮, thus producing a D-minor tuning.

EXAMPLE 3-45. D-minor Tuning

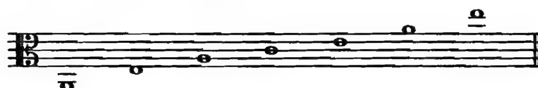


Hindemith used two different tunings in his works for viola d'amore:

EXAMPLE 3-46. Tuning for Hindemith, Sonata for Viola d'amore and Piano, Op. 25, No. 4

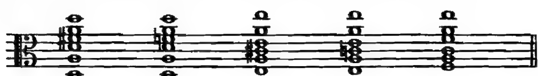


EXAMPLE 3-47. Tuning for Hindemith, *Kammermusik* No. 6 for Viola d'amore and Orchestra, Op. 46, No. 1



Vivaldi used the following tunings on six-string viola d'amores in his concertos:

EXAMPLE 3-48. Tuning for Vivaldi Concertos



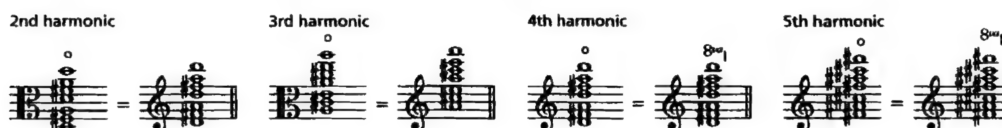
Viola d'amore music is written today in the alto and treble clefs, although in the past, music for the lower strings was often notated in the bass clef, sounding an octave higher.

EXAMPLE 3-49. Range



The instrument is slightly larger than the modern violin. Chords and arpeggios are easy to play, especially in keys related to the tuning used. Natural harmonics are also easily obtained up to the fifth harmonic. Here are the resulting harmonics in the usual D-major tuning:

EXAMPLE 3-50. Viola d'amore Harmonics



Artificial harmonics are also possible, the most successful being those produced by the "touch fourth" method. All other violin techniques of fingering, bowing, and obtaining coloristic effects can also be executed on the viola d'amore.

Two passages from the literature for viola d'amore are the following. In the first, the voice is not recorded on the CD:

CD-1/TR. 71

EXAMPLE 3-51. Meyerbeer, *Les Huguenots*, Act I, "Ah! quel spectacle," mm. 1–19

Andante

Viola d'amore

RAOUL

Recit.

Ah! quel spec-tacle en-chan-teur

Recit.

vient s'of-frir à mes yeux!

Flageolettöne.

riten.

EXAMPLE 3-52. Hindemith, *Kleine Sonate,* second movement, mm. 14–37

CD-1/TR. 72

Sehr langsam

Viola d'amore

VIOLONCELLO OR CELLO

Violoncello (It.); Violoncelle (Fr.); Violoncell (Ger.)

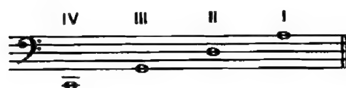
The cello is both the tenor and the bass of the string section. Whereas the violin and viola rest on the left shoulder and are supported by the chin, the cello, because of its larger size, is held between the knees while the player sits; additional support is provided by an adjustable peg that slides out of the bottom of the instrument and reaches to the floor. The neck of the cello points over the player's left shoulder.



ROBERT SYLVESTER, CELLO

Tuning, Range, and Fingering

EXAMPLE 3-53. Tuning



All music for the cello is written in either the bass, tenor, or treble clef. Example 3-54 gives the suggested clef changes to avoid multiple ledger lines:

EXAMPLE 3-54. Clefs



A warning to score readers: In some older editions of orchestral scores, cello parts notated in the treble clef were meant to sound an octave lower than written. Today, all cello parts, whether notated in the bass, tenor, or treble clef, sound as written.

EXAMPLE 3-55. Range

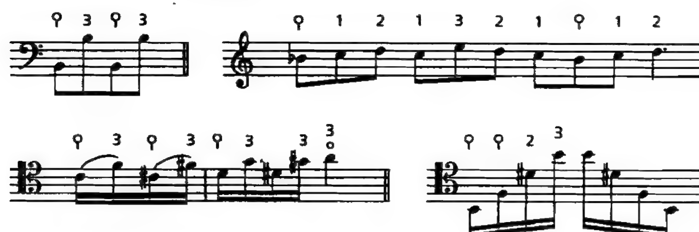


CD-ROM
CD-1
FINGERING/
SHIFTING
ON THE CELLO

Fingering

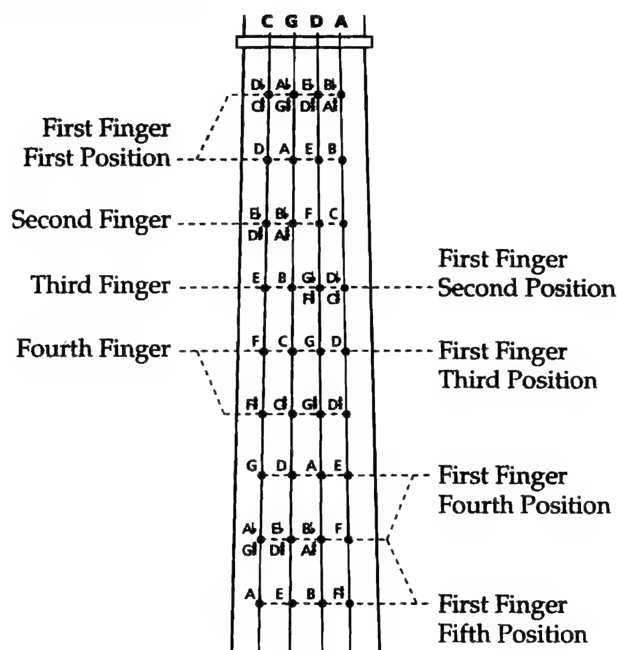
Because of the greater length of the cello strings, a different fingering system from that used on a violin or viola is employed. In first position, the normal compass between the first and fourth fingers is a 3rd, with the second finger used only for chromatic intervals. As the hand moves to higher positions the physical distance between the intervals diminishes and all four fingers are used more often, similar to the fingering on the viola. Because the cellist's left hand is freed from the burden of supporting the instrument, the thumb can be used in higher positions. In seventh position, the left thumb leaves its position around the neck and therefore is able to finger higher notes. With the additional use of the thumb, the cellist can stretch to octave double stops on adjacent strings with relative ease, although double stops larger than a sixth are difficult in the low register. The sign in the score that indicates to the performer to use the thumb is ♀.

EXAMPLE 3-56. Fingering with the Thumb



The following fingering chart shows some thumb positions.

FINGERING ON THE CELLO



Tone Quality

Ecstatic descriptions of the cello's tone quality cannot convey the singular beauty of this instrument's sound in passages that feature the entire section as well as those in which the cello acts as one voice within a contrapuntal texture. The D is the most musically captivating string on this instrument, exuding a warm and lyrical quality. The A is the most brilliant and piercing; the G is the least strong and carries less well than the others. Because of its weight and thickness, the C, the lowest string, is a richly sonorous bass. Berlioz once said that the cello is not "capable of extreme agility." This statement cannot but appear completely erroneous today, for the cello can execute practically any technical feat possible on the viola or the violin.

Here are some representative passages:

EXAMPLE 3-57. Wagner, *Tristan und Isolde*, Prelude, mm. 17–32

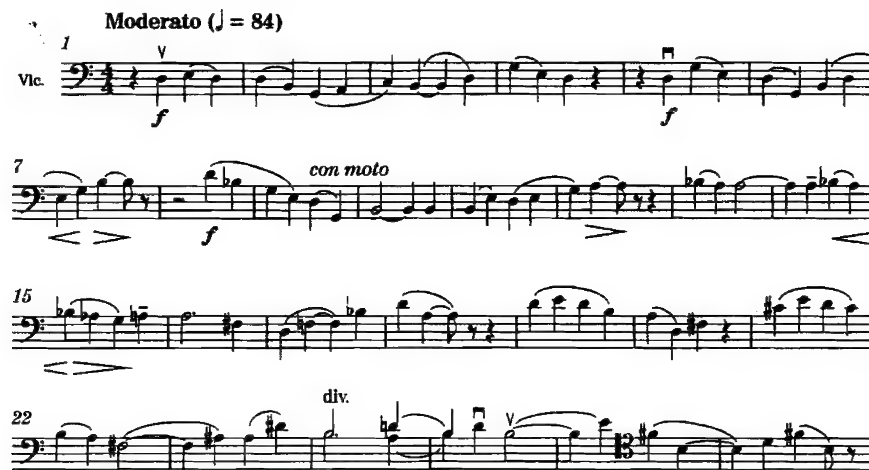
CD-1/TR. 73
INDEX 1 / 0:00

17 Slowly
Vlc.
p *f*
21
p *p* *cresc.* *f* *dim.*



CD-1/TR. 73
INDEX 2 / 1:40

EXAMPLE 3-58. Harris, Symphony No. 3, first movement, mm. 1–27



ADDITIONAL PASSAGES FOR STUDY

Beethoven, Symphony No. 3, first movement, mm. 1–8
Brahms, Symphony No. 3, third movement, mm. 1–12
Brahms, Symphony No. 2, third movement, mm. 194–202

Cellos are frequently used *divisi* to create a very rich effect, as in the following example:

CD-1/TR. 74

EXAMPLE 3-59. Rossini, *William Tell*, Overture, mm. 1–10



ADDITIONAL PASSAGES FOR STUDY

Debussy, *La Mer*, first movement (throughout)
Mahler, *Das Lied von der Erde*, fifth movement, mm. 1–4 at [10]
R. Strauss, *Also sprach Zarathustra*, 18 mm. before [10] to 1 m. before [10] (divided cellos and basses)

Multiple Stops

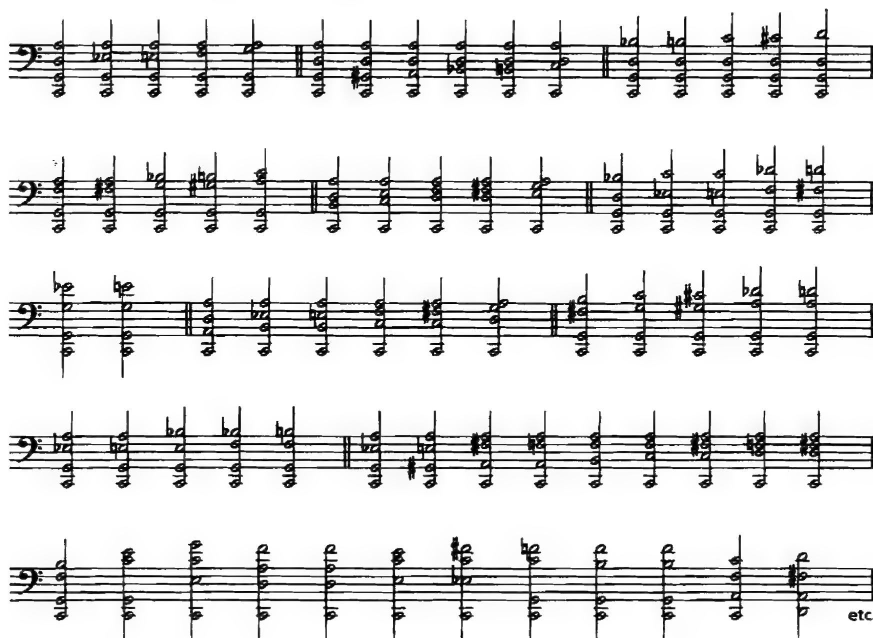
Here is a partial list of double, triple, and quadruple stops possible on the cello.

EXAMPLE 3-60. Double Stops

EXAMPLE 3-61. Triple Stops



EXAMPLE 3-62. Quadruple Stops



Harmonics

The ways of obtaining natural harmonics on the cello are identical to those for the other string instruments; cello harmonics are even more secure because of the greater length and weight of the strings on this larger instrument. The "touch 4th" technique is the most successful for orchestral writing and produces the best quality of artificial harmonic. These artificial "touch 4th" harmonics are played with the thumb (on the fundamental) and the third or fourth finger throughout the entire range of the instrument.

EXAMPLE 3-63. Harmonics on the Cello

a. NATURAL HARMONICS

Actual harmonics

Third string

Lightly touched note

Actual harmonics

Fourth string

Lightly touched note

b. NATURAL AND ARTIFICIAL HARMONICS

Actual harmonics

ADDITIONAL PASSAGE FOR STUDY

J. Corigliano, *Phantasmagoria* (beginning)

The Solo Cello in Concertos and within the Orchestra

The cello literature is rich in concertos by the major composers of the Baroque period through the twentieth century. Some outstanding examples are by Boccherini, Haydn, Beethoven (triple), Schumann, Brahms (double), Dvořák, Tchaikovsky (*Rococo Variations*), Lalo, Victor Herbert, Milhaud, Bloch (*Schelomo*), Hindemith, Barber, Walton, Lutosławski, Penderecki, Stephen Albert, Christopher Rouse, and Joan Tower.

Frequently, the cello is used as an occasional soloist in an orchestral work, such as in the following famous passage:

EXAMPLE 3-64. R. Strauss, *Don Quixote*, mm. 163–176

CD-1/TR. 75

Andante con moto

Vlc.

mf

ADDITIONAL PASSAGES FOR STUDY

Brahms, Piano Concerto No. 2, third movement, mm. 71–86
Haydn, Symphony No. 95, second movement (throughout), third movement (Trio)

The Cello in Combination with Other Instruments

This subject will be discussed in greater detail in later chapters. Suffice to say that the cello doubles well with many instruments in all the orchestral choirs. The most widely used doublings are cello and double bass, cello and bassoon, cello and clarinet or bass clarinet, cello and horn, and pizzicato cello and timpani. In the following example the second cello doubles the first viola.

CD-1/TR. 76

EXAMPLE 3-65. Barber, *Essay for Orchestra No. 1*, mm. 1–10

ADDITIONAL PASSAGES FOR STUDY

Beethoven, Symphony No. 5, third movement, mm. 162–179
Glinka, *Ruslan and Lyudmila*, Overture, mm. 81–100
Schubert, Symphony No. 9, Introduction (cello and viola double for the whole introduction)
Verdi, *Falstaff*, Act I, second measure after [8], for 8 mm. (cello and piccolo melody five octaves apart)

DOUBLE BASS

Contrabasso (It.); Contrebasse (Fr.); Kontrabass (Ger.)

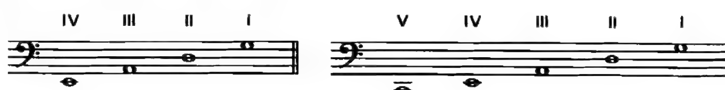
This is the real bass voice of the string choir. The practical orchestral range is from E^2 (sounding an octave lower) to $B\flat^4$ (again sounding an octave lower); in solo passages, higher notes can be produced through the use of natural harmonics. The double bass rests on an adjustable peg; the player stands, or sits on a high stool, and supports the instrument with the body and the left knee. Almost all orchestral players use a large, full-sized instrument, although some solo performers have used smaller models, which are more flexible and easier to play. These smaller models, however, do not have the true contrabass tone quality.



JAMES B. VAN DEMARK, DOUBLE BASS

Tuning, Range, and Fingering

EXAMPLE 3-66. Tuning



The double bass is notated an octave higher than it actually sounds, thus:

EXAMPLE 3-67. Double-Bass Notation



All music for the double bass is written in bass, tenor, or treble clef. A change of clef is suggested to avoid notes with three or more ledger lines.

EXAMPLE 3-68. Range



There are two minor differences in construction between the double bass and the other members of the violin family: its shoulders are sloped rather than curved, and it has cogwheel tuning pegs to cope with the thickness of its strings. Despite its size, a single double bass has a rather small sound. Double-bass solos sound thin and distant, as can be heard in the opening measures of the second movement of Mahler's Symphony No. 1. On the other hand, a group or section of basses, such as in the trio of the third movement of Beethoven's Symphony No. 5, can sound quite loud and raucous. Because of its thick and heavy strings, the instrument's articulation is more sluggish than that of any other string instrument. It is important to remember this fact when doubling basses with cellos in fast passages. Some of Beethoven's passages for the bass section sound muddied, particularly when played by the larger orchestra of today; conductors have taken liberties to ameliorate this peculiar but natural acoustic phenomenon, as in the following example.

CD-1/TR. 77
INDEX 1 / 0:00

EXAMPLE 3-69. Beethoven, Symphony No. 4, fourth movement, mm. 319–323

Here is a practical solution to clarify the sound of the above passage:

CD-1/TR. 77
INDEX 2 / 0:15

EXAMPLE 3-70. Beethoven, Symphony No. 4, fourth movement, mm. 319–323, clarified

Fingering

CD-ROM
CD-1
FINGERING/SHIFTING ON THE DOUBLE BASS

Because the double bass is so large and its strings so long, even small intervals are separated by a wide physical space. For instance, in the lower positions, the first to fourth fingers encompass a major second. On the double bass the third finger usually is not used independently up to and including the fifth position but is placed together with the fourth finger on the string. Therefore, from the first through the fifth positions, only the first, second, and fourth fingers are used; in the sixth position, the third finger is sometimes used, and after the seventh position, the thumb can also be called on.

EXAMPLE 3-71. Double-Bass Fingering

half pos. 1st pos. 1 ½ pos. 2nd pos. 3rd pos. 3 ½ pos.

4th pos. 4 ½ pos. 5th pos. 6th pos. 6 ½ pos. 7th pos. 7 ½ pos.

Sul E Sul A Sul D Sul G

Sul E Sul A Sul D Sul G

A word of warning: Moving up into the upper range on the double bass is best done by means of small intervals—steps or small skips—rather than large leaps, since the player must reorient the left hand when approaching the upper register, a more difficult task due to the tremendous length of the strings. But this upper range can be used very effectively in orchestral music, as long as a common-sense approach is taken in how to get the performer to it.

The following excerpt for double bass is particularly characteristic (in the opera, it is doubled with tuba):

EXAMPLE 3-72. Wagner, *Die Meistersinger*, Overture, mm. 158–172

CD-1/TR. 78

Allegro

158 D.B. *mf aber sehr markiert*

163 *allmählich immer stärken*

168

ADDITIONAL PASSAGES FOR STUDY

Beethoven, Symphony No. 6, fourth movement, mm. 41–47
Tchaikovsky, Symphony No. 6, first movement, mm. 1–6
Verdi, *Otello,* Act IV, mm. 7–18

Early Uses of the Double Bass

During the Baroque and Classical periods and up to Beethoven, the double bass traditionally doubled the cello for most or all of a composition. Independent bass parts appear rarely in purely orchestral literature during this time, although one may find a few instances in opera scores. When composers desired lighter bass lines, they would simply write *senza basso* in the cello part, and when they wanted the double basses to resume playing, the phrase + *basso* was inserted in the score.

Multiple Stops

The use of double, triple, or quadruple stops for the double bass is risky—particularly in terms of intonation—and should be avoided in orchestral writing, unless one or more of the desired pitches are open strings. Because of the closer proximity of the notes in the upper positions, double stops are more feasible, although *divisi* instructions should also be given to facilitate the playing of these orchestral bass parts. Despite the plethora of exceptions to this rule, the great difficulty in getting double stops (without open strings) in tune, as well as the thick, muddy sound of close double stops (seconds, thirds) in any lower register should preclude writing multiple stops on the bass, unless such sounds are desired as special effects.

Harmonics

As has been said above, only natural harmonics should be asked of the bass player. Here is a list of the simplest harmonics on the G string. The same harmonics can be played on all other strings—transposed, of course.

EXAMPLE 3-73. Natural Harmonics

Sul G
Written
middle of string toward the bridge
Sounding
Sul G
middle of string toward the nut

ADDITIONAL PASSAGE FOR STUDY

Ravel, *L'Enfant et les sortilèges,* at [1] to 1 m. before [3]

Bowing

Bass players can use all the types of bowing discussed in Chapter 2, including coloristic effects. Since the bow used by double-bass players is thicker, heavier, and quite a bit shorter than that of the violin or even the cello, the best way to have bass players slur long passages or play lengthy *tenutos* is to ask the players to change the bow at will.

The C Attachment

In most orchestras today, at least two or three members of the double bass section have instruments with a C attachment, a device that permits all chromatic notes from the E string to the C below to be played. If these notes are requested and there are no instruments in the section with the attachment, the section will automatically play the notes an octave higher. The attachment was originally installed so that all the doubled cello passages could be performed an octave lower than written without necessitating switching octaves in the middle of the passage when the cello went down to its low C string. There are even instances (in Respighi's *Pines of Rome* and Berg's *Wozzeck*) of *scordatura* requests for low B.

Solo, Concertante, and *Divisi* Basses

The concerto literature featuring the solo bass is not very extensive, one reason being the disappointing acoustic carrying power of the solo instrument in a large hall. There are early concertos by Dragonetti, Bottesini, and Dittersdorf, and after a hiatus of perhaps two hundred years, twentieth-century works by Koussevitzky, Zimmermann, Henze, and others. Great double-bass solo artists have come to prominence in the past few decades and are commissioning composers to write works for them. Amusing works, especially for children, using the double bass recently have been written by Jon Deak, a principal bassist with the New York Philharmonic.

Solo passages in nineteenth- and early twentieth-century orchestral literature occur rather infrequently, but concertante and multiple *divisi* bass parts abound.

EXAMPLE 3-74. Stravinsky, *Pulcinella* Suite, seventh movement, mm. 1–22

CD-1/TR. 79
INDEX 1 / 0:00

CD-1/TR. 79
INDEX 2 / 0:34

EXAMPLE 3-75. Milhaud, *La Création du monde*, 1 m. before [11] to 1 m. before [12]



ADDITIONAL PASSAGES FOR STUDY

Mahler, Symphony No. 2, second movement, 1 m. before [4] to 5 mm. after [4]
Mahler, Symphony No. 1, third movement, mm. 3–10
Persichetti, *Symphony for Strings*, first movement, mm. 16–20
Saint-Saëns, *Le Carnaval des animaux*, No. 5, "Eléphant"
R. Strauss, *Also sprach Zarathustra*, mm. 8–22 after [9]
Stravinsky, *Le Sacre du printemps*, mm. 57–66
Verdi, *Falstaff*, beginning of Act III (basses begin alone)

4

PLUCKED STRING INSTRUMENTS

Even though only one of the instruments discussed in this chapter, the harp, is a regular member of the modern symphony orchestra, the others have been appearing more and more frequently, especially in smaller orchestral combinations. Every composer or orchestrator should know at least the number and tunings of the strings, the range, manner of performance, and notation for each of these plucked string instruments.

HARP

Arpa (IT.); Harpe (FR.); Harfe (GER.)

The harp has a very long history as a solo and accompanying instrument, being one of the earliest instruments known to humankind. It has gone through a series of alterations that have gradually increased its overall size and number of strings, without changing its basic conceptual framework. The final result is today's double-action harp, developed during the late eighteenth and early nineteenth centuries.



The immediate predecessor of the double-action harp was the chromatic harp. This instrument had no pedals but instead a string for each semitone. The sheer number of strings presented a challenge to the performer, and this, added to its rather poor tone quality and inability to accommodate a diatonic or chordal glissando, led to the development of the double-action harp. The pedals on a double-action harp, which can be placed in three different positions (up, middle, down), allow all manner of tunings and new ways of playing.

EIILEEN MALONE, HARP

Tuning and Range

The double-action harp has forty-seven strings, encompassing six full octaves and six additional notes.* With all its pedals up the harp is tuned to C♭ major. Its range is:

EXAMPLE 4-1. Range



The top of each of the forty-seven strings is attached to a tuning peg and the bottom to a pedal, which when put in its lowest position (that is, down) can raise each note one whole step. The three positions of the pedal perform the following functions:

1. Pedals all the way up give the original C♭ major scale.
2. Pedals one notch down (middle) raise all the notes one half step, to C–D–E–F–G–A–B, and so on.
3. Pedals two notches down raise all the notes a whole step, to C♯–D♯–E♯–F♯–G♯–A♯–B♯, and so on.

All C strings, for example, or all G strings, to take another example, are controlled by one pedal each, so that if the C♭ is depressed one notch, the entire series of C♭ strings (a total of six strings) becomes a C♮ series.† Therefore, one cannot play a C♭ in one octave with a C♮ in another, a fact that has been too often overlooked or misunderstood by some orchestrators and composers. Thus, one has to think creatively in writing for the harp. The composer or orchestrator could write the C♭ as a B♮ so that C♭ and C♮ can be played on separate strings and therefore controlled by two different pedals.

The lowest twelve strings of the harp are made of steel core wound with wire; the rest of the strings are made of gut wound with wire. Each C string is red and each G string is blue. Tuning a harp is a tedious task, so the harpist is usually on stage or in the pit preparing the instrument long before the rest of the orchestra players arrive. The harpist uses a key to turn—that is, tune—the pegs at the top of the harp around which the strings are wound. As with all string instruments, the pitch of the strings needs frequent adjustment.

*The pitches C, D, and E are repeated at the very bottom of the range while F and G are repeated only at the top of the harp's range.

†The two lowest strings, D^1 and C^1, are not affected by the pedal mechanism and have to be tuned manually. The same was true of the uppermost G^7 until about five years ago; it is now controlled by the G pedal that controls all other Gs. Consequently, the lowest D and C, and possibly the highest G, could require manual retuning if a change in pitch is called for during the performance of a work. Before the piece is performed, the harpist usually tunes these pitches to the first pitch that is required. All other strings, however, do change pitches automatically when their pedals are manipulated.

Arrangement of the Pedals

CD-ROM
CD-1
PEDAL SETUP

The pedals are arranged from left to right as follows:

D C B / E F G A

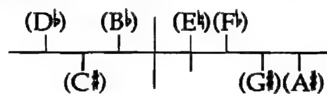
D, C, and B are operated by the left foot and E, F, G, and A by the right foot. It is important to memorize the arrangement of the pedals on a harp, as well as which foot operates which pedal, in order to avoid requesting a simultaneous change of two pedals operated by the same foot*—for instance, asking the harpist to change the E and G pedals at the same time. However, pedals operated by different feet, such as the D and G pedals, can be changed simultaneously.

Just before the beginning of a passage, it is best to indicate to the harpist how the pedals should be set. This can be done in one of three ways, listed below; the first two are preferred by harpists.

1. By letter representation:

D♭ C♯ B♭ / E♮ F♭ G♯ A♯

2. By graphic representation that gives the three degrees, or notches, of the harp pedaling mechanism, the top being the "all-flats" one. (The graphic representation is given in a score without the string names, which are included here in parentheses simply to highlight the altered pitches.)



3. By alternate letter representation, which gives the setting for the first pedal first, then second pedal, and so on, on each side. The pedals in this version are numbered from the inside out, so that E is number 1 on the right-hand side, B number 1 on the left. This third setting is not as common (or as clear) as the first two.

E♮ F♭ G♯ A♯

B♭ C♯ D♭

The setting given in the above examples is the one actually used for the famous glissando at the beginning of Debussy's *Prélude à "L'après-midi d'un faune."* Here, the harp produces only four pitches, B♭, F♭, D♭, and A♭, since the strings are tuned enharmonically (A♯ = B♭, C♯ = D♭, E♮ = ♭, G♯ = A♭,):

EXAMPLE 4-2. Debussy, *Prélude à "L'après-midi d'un faune,"* m. 4

CD-1/TR. 80



*It may help to memorize a little ditty, taught to me by my first orchestration teacher. It has stuck with me and enabled me to remember the sequence of the harp pedals with no difficulty. Did Columbus Bring / Enough Food Going [to] America?

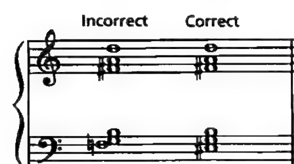
The same pedal setting could also be used for a passage such as this:

EXAMPLE 4-3. Harp Pedal Setting



Enharmonic spellings may be necessary for passages or chords that call, for instance, for both F and F♯. In this case either the F would be spelled E♯ or the F♯ spelled G♭.

EXAMPLE 4-4. Enharmonic Spellings for Pedal Settings



There are many such examples of "strange," but on closer inspection practical, harp pedalings.

Usually the harpist changes the pedal a split second before playing the note, for instance:

EXAMPLE 4-5. Changing a Harp Pedal



Some experienced harpists will make the pedal change even later than marked above. The composer's or orchestrator's main concern is that the tempo will permit time for the changes. Highly chromatic music must be carefully handled; studying the orchestral works of composers like Debussy, Ravel, and Stravinsky and the solo works of the great harpists like Salzedo and Grandjany can offer many clues about writing idiomatically for the harp. Harpists are quite willing to try out new ideas as long as the composer has a well-grounded understanding of the instrument's basic constraints.

Tone Color

The tone color of the harp is somber, dark, and sonorous in the lower two octaves, and lightens progressively farther up the range. The middle two octaves are very rich and warm, while the top two octaves and a half are light and clear. This upper portion does not have a great dynamic range, sustaining power, or carrying potential; the *fortissimo* at the top of the range is like a *mezzo forte* in the middle. Because the string is longest when it is in flat position, the flat keys have more sound potential, but a good harpist can make any tonality sound well by the power in his or her hands plucking the strings.

Harp Notation

Music for harp is notated on two staves, like music for piano, using bass and treble clefs (note the tuning diagram given just above the score).

EXAMPLE 4-6. Mozart, Concerto for Flute and Harp, K. 299, first movement, mm. 44–54

CD-1/TR. 81

Allegro

44

Harp

(*f*) *p* *f* *p*

p *f* *p*

48

f *p* *cresc.* *f*

f *p*

51

There is at least one instance in which the notation is not followed literally by the harpist: the famous harp cadenza from Tchaikovsky's *Nutcracker* ballet. Example 4-7a gives the notation as it is found in every orchestral score, Example 4-7b as most harpists actually perform it. The story goes that the harpist who performed this cadenza at the premiere, with the composer conducting, suggested this revised performance style, which every harpist from that time on has used; but Tchaikovsky never changed the score to reflect the custom.

CD-ROM
CD-1
HARP TECHNIQUE

EXAMPLE 4-7. Tchaikovsky, *The Nutcracker*, "Waltz of the Flowers," mm. 16–33

CD-1/TR. 82

a. PRINTED SCORE

16

Cadenza ad libitum

Harp

ff

19

22

25

28

8va

riten.

b. AS PERFORMED

Harp

sim.

Chords

Chords may be arpeggiated or played in block fashion. Since the harpist uses only the first four fingers of each hand to play (the little finger is never used), an eight-note chord is the maximum for the harp. Three- and four-note chords (per hand) can most effectively achieve a very full sonority. The distance in an octave is much smaller than it is on the piano; for that reason tenths are quite simple to reach. Here is a passage that sounds well on the harp, with the chords spaced in an idiomatic way:

EXAMPLE 4-8. Chords for Harp

CD-1/TR. 83



Traditionally, all chords are rolled unless a bracket ([) precedes the chord, indicating it is to be played unbroken or "flat." Particularly in slow passages, a composer will often place a wavy line (≀) before a chord, which directs the harpist to perform the arpeggio rather slowly and with greater expression. Just as in string chordal pizzicatos, one can indicate the direction of the arpeggio using the symbols ↓ and ↑. If there are no arrowheads on the wavy lines, harpists will roll the chord from the bottom up.

Here are two chordal passages that are notated as if the chords are to be played unbroken, but both are played at least slightly arpeggiated. Since the tempo of the first example is fast, most harpists perform the passage with a fast roll on each chord.

EXAMPLE 4-9. Bartók, Violin Concerto, first movement, mm. 1–13

CD-1/TR. 84



The block chords in the beautiful passage that ends the first movement of Brahms's German Requiem (mm. 152–153) are traditionally arpeggiated, even though there is no indication to do so; playing the chords flat would be too abrupt.

CD-1/TR. 85

EXAMPLE 4-10. Brahms, *Ein deutsches Requiem*, first movement, mm. 150–158 (harp only recorded)

The following excerpt from Debussy's *Prélude à "L'après-midi d'un faune"* effectively combines arpeggiated harp with flute:

EXAMPLE 4-11. Debussy, *Prélude à "L'après-midi d'un faune,"* mm. 79–81

CD-1/TR. 86

CD-ROM
CD-1
HARP HARMONICS

Harmonics

Harp harmonics, which sound beautifully bell-like, are produced in two ways, both sounding an octave higher than the pitch of the string when played in normal fashion:

1. The player touches the center of the string (at the node) with the lower portion of the left palm and plucks the string with the left thumb.
2. The player touches the center of the string (at the node) with the outside of the knuckle of the right index finger and plucks the string with the right thumb.

The right hand can play only single harmonics; the left hand can play two or three harmonics at a time (as multiple stops), but the pitches have to be all sharp, all flat, or all natural.

Harmonics are usually notated with a zero over the note and sound an octave higher than written, as in Examples 4-12, 4-13, and 4-14. Some composers write the note at sounding pitch and put a circle over it. This can be confusing unless the particular method used is explained somewhere in the score.

For best results in employing harp harmonics, two factors should be kept in mind:

1. Harp harmonics are very soft and to be heard must be accompanied by a very light orchestration or played solo.
2. The most practical range for harp harmonics is between A^2 ( ) and F^5 ( ). Above and below these pitches the harmonics are too difficult to produce and therefore not always reliable.

CD-1/TR. 87

EXAMPLE 4-12. Debussy, *Nocturnes*, "Nuages," mm. 74–78



CD-1/TR. 88

EXAMPLE 4-13. Ravel, *Daphnis et Chloé*, symphonic fragments, "Nocturne," mm. 49–53

EXAMPLE 4-14. Salzedo, *Modern Studies*, "On Doubled Notes," beginning

CD-1/TR. 89



Special Effects

The harp can be used as a melodic, an accompanying, and a doubling instrument with great success. In addition, several special color effects are used quite often in orchestral literature.

Près de la table (FR.)

CD-ROM
CD-1
PRÈS DE LA TABLE

The harpist plucks the string near the soundboard to give a hard, brittle, almost metallic sound.

EXAMPLE 4-15. Britten, *Four Sea Interludes* from *Peter Grimes*, "Storm," mm. 112–116

CD-1/TR. 90



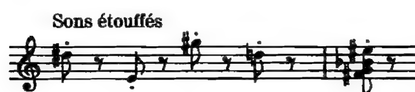
Sons étouffés (FR.)

CD-ROM
CD-1
SONS ÉTOUFFÉS

Each note is dampened as soon as it is plucked. The effect is that of a *secco* pizzicato on strings. The passage must be slow enough to allow enough time for the entire hand to dampen the string or strings. To create an even more metallic effect, the strings may be plucked with the fingernail.

EXAMPLE 4-16. *Sons étouffés*

CD-1/TR. 91



Glissando

Perhaps the best-known harp sound is glissando, which should not be overused for the sake of "showing off" the harp. Whenever a glissando is written, one must specify how the harp is to be tuned, and give the starting pitch as well as the ending one.

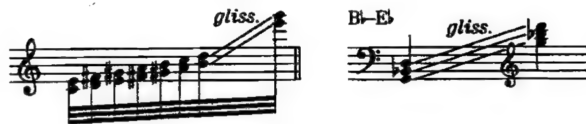
CD-1/TR. 92
INDEX 1 / 0:00

EXAMPLE 4-17. Glissandi



CD-1/TR. 92
INDEX 2 / 0:13

EXAMPLE 4-18. Multiple Glissandi



See also Example 4-2.

CD-ROM
CD-1
BISBIGLIANDO

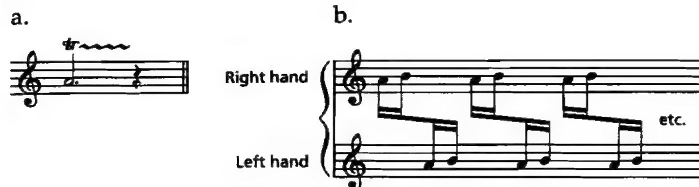
Trills, Tremolos, and *Bisbigliando* (IT.)

Trills can be produced in three ways:

1. By two fingers of one hand (this cannot be done at great speed)
2. By alternating hands plucking the same string (not always easy to execute or to make even)
3. By tuning two different strings to sound the same pitch and then trilling with the two hands in alternation.

The last method is the most effective and the one harpists use most frequently.

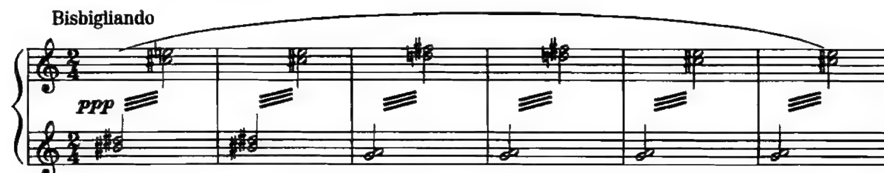
EXAMPLE 4-19. Trills



A normal tremolo can be executed by alternating two hands on the strings. Another type of tremolo unique to the harp, called *bisbigliando* ("whispering"), is played very softly and creates a special rustling effect.

CD-1/TR. 93

EXAMPLE 4-20. *Bisbigliando*



Today, composers have devised many other harp effects for which standard notation is still evolving (see K. Stone, *Music Notation in the Twentieth Century*, [New York: W. W. Norton, 1980], pp. 228–256). Some of these are:

1. Knocking on the soundboard
2. Plucking the strings with the fingernails
3. Using a plectrum or pick to pluck the strings
4. Playing harmonics other than the octave harmonic
5. Buzzing the string by first plucking it and then changing its pedal up or down

All these effects, and many more, can be achieved on the harp. The composer or orchestrator should strive to make his or her musical intentions clear in the notation, and when doubtful about the feasibility of any unusual technique, should consult a professional harpist.

ADDITIONAL PASSAGES FOR STUDY

Dukas, *L'Apprenti sorcier* (harp harmonics at opening)
Falla, *The Three-Cornered Hat*, [7] to [10] (prominent harp)
L. Foss, Symphony No. 3, "Elegy," beginning (string buzzing on the harp)
Ginastera, Harp Concerto
Henze, Harp Concerto
Hindemith, *Concerto for Woodwinds, Harp, and Orchestra*, [D] to [E] (woodwinds and harp)
Ravel, *Introduction and Allegro*, 10 measures after [17] (cadenza with harmonics, glissandi, and so forth)
Stravinsky, *The Firebird* ballet (1919 version), "Berceuse," mm. 1–16 (harp harmonics)
Varèse, *Amériques*, at [2] (striking the soundboard)
E. Zwilich, *Symbolon*, [8] through [13]

Study also the many exceptional harp passages in Tchaikovsky's *Nutcracker*, which culminate in the "Pas de deux" of Act II (at [14]) with a most effective passage for two harps.

GUITAR

Chitarra (It.); Guitare (Fr.); Guitarre (Ger.)

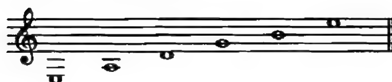


GUITAR

The guitar has enjoyed an amazing renaissance. Since folk music, jazz, and rock have become so popular, everyone seems to be playing the guitar. There are many types of guitar: Spanish, Hawaiian, electric, and acoustic, to name but a few. We shall limit our discussion to the classical guitar, since it is the one used in an orchestra, whenever a guitar is asked for—unless the composer specifies otherwise.

The tuning of the guitar stems from the old lute tunings and is irregular in that it does not maintain the same intervals between each of the six strings:

EXAMPLE 4-21. Tuning



EXAMPLE 4-22. Range (all pitches sound an octave lower than notated)



Single-line melodies, chords, and melodies with accompaniments are all possible on the classical or acoustic guitar, which is fingered with four fingers of the left hand and plucked with all five fingers of the right hand. A fretted fingerboard makes it easier to locate pitches. Harmonics, especially natural harmonics, are very effective, but one must keep in mind that a nonamplified guitar is quite soft, and harmonics may be almost inaudible. Therefore, harmonics are best used in solos or in very small combinations of softer strings and winds, or with voice. There are guitar parts in Rossini's *Barber of Seville*, Weber's *Oberon*, Thomson's *The Plow That Broke the Plains* (which also has a banjo part), Boulez's *Le Marteau sans maître*, Penderecki's *Devils of Loudon* (bass guitar), and others.

CD-1/TR. 94

EXAMPLE 4-23. Stravinsky, *Tango*, mm. 1–6

Tempo di Tango

4 Cl.* a 2 *mf* *sim.*
Bs. Cl.* *mf*
Tpt. *non stacc.* *p*
Trb. *non stacc.* *p*
Guitar* *p*

*sounds as written.

4 Cl.
Bs Cl.
Tpt.
Trb.
Guitar

ADDITIONAL PASSAGES FOR STUDY

Berg, *Wozzeck*, Act II, Waltz, at 481
J. Corigliano, *Troubadours* Variations for Guitar and Chamber Orchestra
M. Gould, *Pop's Serenade* (guitar played throughout)
P. Grainger, *Willow Willow* (extensive guitar part)
J. Harbison, Guitar Concerto
J. A. Lennon, Concerto for Guitar and Orchestra
P. Maxwell Davies, *The Blind Fiddler* (guitar prominent throughout)
Rossini, *The Barber of Seville*, Act I, "Introduzione" (cavatina features guitar)
Schoenberg, *Serenade* (guitar prominent throughout)
Stravinsky, *Tango* (guitar prominent throughout)
T. Takemitsu, *To the Edge of Dream* (guitar prominent throughout)
Webern, Five Pieces for Orchestra, Op. 10, Nos. 3 and 5

MANDOLIN

Mandolino (IT.); *Mandoline* (FR. AND GER.)

The mandolin has eight strings tuned in pairs, pitched like the strings of a violin.

EXAMPLE 4-24. Tuning

Strings 1 2 3 4 5 6 7 8

EXAMPLE 4-25. Range





MANDOLIN

Single notes and double stops are plucked with a pick or plectrum; sustained notes are effected by playing tremolo in one of two ways: either playing the same note on two like strings, or playing two unlike notes on neighboring strings. The fingerboard is fretted to facilitate finding the notes.

This instrument appeared occasionally in orchestral and operatic scores to Grétry and Mozart's day. Classical composers favored it as an accompaniment to serenades. It then disappeared, to resurface in late Verdi (*Otello*), Mahler (Symphony No. 7), Schoenberg (*Serenade*), Respighi (*Feste romane*), Stravinsky (*Agon*), Crumb (*Ancient Voices of Children*), and other works. It is a quiet instrument, best used solo or lightly accompanied by muted strings or soft winds.

CD-1/TR. 95

EXAMPLE 4-26. Mozart, *Don Giovanni*, Act II, "Deh vieni alla finestra," mm. 1–10 (voice part not recorded)

Allegretto

1

pizz.

Vln. 1

pizz.

Vln. 2

pizz.

Vla.

Mandolin

DON GIOVANNI

Deh

pizz.

Vlc.
D.B.

5

Vln. 1

Vln. 2

Vla.

Mandolin

GIOVANNI

vie - ni al -la fi - ne - stra, o mio te - so - - - ro, deh

Vlc.
D.B.

9

Vln. 1

Vln. 2

Vla.

Mandolin

DON GIOVANNI

vie - - - ni a con - so - - lar il

Vlc.
D.B.

EXAMPLE 4-27. Crumb, *Echoes of Time and the River*, fourth movement, mm. 8–9 | CD-1/TR. 96

8

delicate, fragile

(senza trem.)

Mandolin
offstage

ppp

"A distant music"

pizz. (fingertips)

pppp

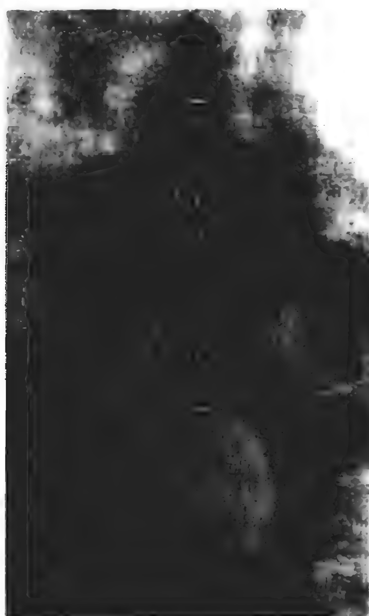
Piano 1

𝄊 *(sempre)*

ADDITIONAL PASSAGES FOR STUDY

Respighi, *Feste romane*, third movement, at [24]
Schoenberg, *Serenade*, Op. 24 (throughout)
Schoenberg, Variations for Orchestra, Op. 31, m. 420 to end
Stravinsky, *The Nightingale* (throughout)
Webern, *Das Augenlicht*, mm. 8–9, 39–42
Webern, Five Pieces for Orchestra, Op. 10, Nos. 3, 4, and 5

BANJO

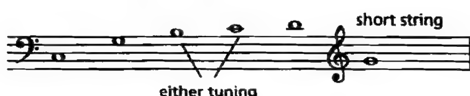


The banjo originated in West Africa and was introduced into this country by black slaves. Thomas Jefferson wrote that the Africans brought along an instrument they called "banger." (In Senegal the lute is still called "banio.") Jefferson himself referred to this instrument as the "banjar." The early banjo was a crude instrument and was not really perfected until 1847, during the career of the first professional banjo player, Joe Sweeney.

BANJO

At that time the banjo was very much as it is today, a body like an enclosed tambourine with a long neck, and the bridge mounted on a parchment head. It is played either with or without a plectrum or pick. The five-string banjo used in bluegrass music and minstrel bands is tuned:

EXAMPLE 4-28. Tuning



EXAMPLE 4-29. Range*



*The tenor banjo sounds an octave lower than written.

The range of each string is a major 9th above the fundamental tuning; for instance, one could play E^5 on the D string.

The high G, called the thumb string, is a short string connected to an outside peg. It is used for drones and similar effects. All other strings are fretted, making it easy to find the pitches. Some banjos have only four strings; others have five or more regular-length strings that are often tuned quite differently from the five-string tuning above. For some pieces the banjo is tuned like the guitar; because guitar players were often asked to double on the mandolin as well as the banjo in the theater orchestras and jazz bands of the 1920s and early 1930s, these instruments were and still are tuned pretty much alike. Currently, there has been no great movement to include the banjo as part of the orchestra, except in theater orchestras and imitations of bluegrass music.

Here is a sample of what typical banjo music looks like. In this excerpt, the banjo is hardly heard over the horns:

EXAMPLE 4-30. Gershwin, *Rhapsody in Blue*, [28]–[29]

CD-1/TR. 97

F Hn. 1, 2
Sax. 1 E♭ Alt.
Sax. 2 B♭ Ten.
Sax. 3 E♭ Alt.
Banjo

ADDITIONAL PASSAGES FOR STUDY

J. A. Carpenter, *Skyscrapers* (throughout)
Delius, "La Calinda" from *Koanga* (opera)
Gershwin, Suite from *Porgy and Bess*
M. Gould, *Foster Gallery* Suite (throughout)
J. Harbison, *The Great Gatsby* (throughout))
Krenek, *Kleine Symphonie*, Op. 51 (throughout)
Thomson, *The Plow That Broke the Plains* (throughout)
Weill, *Mahagonny* (throughout)
W. Zinn, *Symphony in Ragtime* (throughout)

ZITHER

Cythare (It. and Fr.); Zither (Ger.)

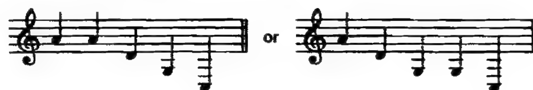
The zither is an ancient instrument mostly used today for special coloristic effects (as can be heard in the main theme from the movie *The Third Man*). Since it was widely played by folk musicians in southern Germany and Austria, composers like Johann Strauss in *Tales from the Vienna Woods* used it to evoke the locale. Not until the latter part of the nineteenth century was a practical modern version of the instrument perfected.



ZITHER

The zither has five melody strings on which the upper line of the notation is performed by the left hand. These strings are tuned in one of two ways:

EXAMPLE 4-31. Melody Strings



The accompaniment is played with the right hand on twenty-four accompaniment and bass strings tuned in the following manner:

EXAMPLE 4-32. Accompaniment Strings



EXAMPLE 4-33. Bass Strings



All accompaniment and bass strings sound an octave lower than written. All the zither strings may be retuned at the composer's discretion. The tunings given above are the most usual ones.

The instrument lies on a table or stand. The left hand fingers the melody while the right thumb, wearing a plectrum or pick, plucks the strings. The accompaniment is performed by the other four fingers of the right hand, which pluck the accompaniment and bass strings.

EXAMPLE 4-34. J. Strauss, *Tales from the Vienna Woods*, mm. 75–93

CD-1/TR. 98

ADDITIONAL PASSAGES FOR STUDY

L. Foss, *American Landscapes* (guitar concerto), beginning duet (harp and solo guitar)
S. Gubaidulina, *From the Book of Hours* (zither, electric guitar, guitar)
M. Torke, *Adjustable Wrench* (electric guitar)
Webern, Five Pieces for Orchestra, Op. 10 (mandolin, guitar, harp)

5 SCORING FOR STRINGS

The string section has been the chief lyric-harmonic element in the orchestra for much of the past two hundred fifty years. This section, which has evolved into five distinct voices, is able to sustain major musical ideas either as a choir within the full orchestral texture or in works for strings alone. It has been said that the listener never tires of the varied sounds and timbres that strings can produce. This depends, of course, on how this very versatile choir is used, and we shall try to study its potential in a variety of situations in this chapter.

INDIVIDUALITY WITHIN THE ENSEMBLE

Even though it is not the province of this book to discuss the history and technique of string quartet and quintet writing, it is important to call attention to the great and influential quartets of Haydn, Mozart, and Beethoven, for the experiments within these pieces of chamber music had far-reaching effects on the successful establishment of a five-part string choir, the forebear of the virtuosic string ensemble we find in today's orchestra. Here are some of the results:

1. the emancipation of the second violin, viola, and cello so that they become equal partners with the first violin;
2. the use of voice crossings for special effects;
3. the use of particular registers on all instruments for coloristic as well as structural purposes;
4. the extension of the range on all instruments.

To illustrate these points, we will study twelve measures from the second movement of a late Haydn string quartet, the *Emperor* quartet, Op. 76, No. 3. Even though this chamber piece is written for four solo players, we can easily apply the principles it illustrates to the string orchestra and, by extension, to the string choir in a symphony orchestra. This work does not, of course, include the double bass, but that instrument will also enter into our discussion. The second movement has the famous German national anthem as its theme, which is then used in some of the variations.

Haydn, String Quartet Op. 76, No. 3 ("Emperor"), Second Movement, Theme

The theme is presented in a simple textural setting with straightforward harmony. Notice the dual rhythmic coupling of the two violins playing the melodic material and of the viola and cello providing the harmonic background. The faultless voice leading used in this excerpt gives emphasis to and expertly supports the exposition of the melody.

CD-2/TR. 1

EXAMPLE 5-1. Haydn, String Quartet Op. 76, No. 3, second movement, mm. 1–12

Poco adagio cantabile

Vln. 1
Vln. 2
Vla.
Vlc.

Variation I

The series of variations that follow demonstrate Haydn's regard for each of the four members of the ensemble as equal partners. In the first variation, the second violin presents the theme while the first plays harmonically based counterpoint against it.

EXAMPLE 5-2. Haydn, String Quartet Op. 76, No. 3, second movement, Variation I

CD-2/TR. 2

Var. I

20

Vln. 1
Vln. 2
Vla.
Vlc.

sempre p

24

Vln. 1
Vln. 2
Vla.
Vlc.

27

Vln. 1
Vln. 2
Vla.
Vlc.

30

Vln. 1
Vln. 2
Vla.
Vlc.

fz

Variation II

In the second variation, the theme is given to the cello. Notice how the cello rises above the viola and, for a moment, even above the lower note of the second violin in measures 10–11. Haydn undoubtedly wished to feature the richer, more intense quality of the cello in that register; had the melody been assigned to the second violin, it would fall in the violin's weakest register. Thus, the second violin has merely an accompanying role, coupling the cello part a 3rd higher. Notice also that the viola is used as a pedal instrument, emphasizing mostly the tonic and dominant notes to fill out and clarify the harmony.

CD-2/TR. 3

EXAMPLE 5-3. Haydn, String Quartet Op. 76, No. 3, second movement, Variation II

Var. II

41

Vln. 1
Vln. 2
Vla.
Vlc.

45

Vln. 1
Vln. 2
Vla.
Vlc.

49

Vln. 1
Vln. 2
Vla.
Vlc.

Variation III

In Variation III, the melody is assigned to the viola, and Haydn places it above the two violins. Notice how glorious the viola sounds as a melody instrument. We can see that Haydn does not place dynamics at the beginning of each variation except the first, where the direction is *sempre piano;* instead, he relies entirely on the registers of the instruments and his scoring to achieve the correct dynamics. But more than this, he uses his skills to ensure that the desired voice dominates and the others support. In this variation we also find the cello taking on a supporting role, in the form of an involved contrapuntal countermelody, rather than simply providing a bass.

EXAMPLE 5-4. Haydn, String Quartet Op. 76, No. 3, second movement, Variation III

CD-2/TR. 4

Var. III

61

Vln. 1

Vln. 2

Vla.

Vlc.

65

Vln. 1

Vln. 2

Vla.

Vlc.

69

Vln. 1

Vln. 2

Vla.

Vlc.

Variation IV

The final variation is a variant of the first statement of the theme (see Example 5-1). The composer refrained from using the octave transposition of the theme until these last moments in the movement—and how fresh it sounds here, how climactic! Too often the extremes of range are wasted too early in a work, and as a result the final buildup is anticlimactic. One can see that the entire formal structure is an accumulation of the elements that in the course of the variations have slowly been introduced into the harmonic and contrapuntal scheme and become a natural part of the statement. The pedal point in the cello gives the feeling of resolution and ending.

CD-2/TR. 5

EXAMPLE 5-5. Haydn, String Quartet Op. 76, No. 3, second movement, Variation IV

The Double Bass in the Classical Orchestra

In the music of Haydn, Mozart, Beethoven, and Schubert, it is usual for the bass to double the cello in most passages, especially in the tutti sections. When a lighter string texture was desired, the double bass was eliminated. Independent double-bass parts became increasingly popular during the nineteenth century, as the cello took on the role of tenor voice of the strings. If Haydn had used a string orchestra with double bass for this piece, in the fourth variation he probably would have doubled the cello (an octave below) from the anacrusis through the first three and a half measures. He would then have dropped it until the dominant pedal in measures 8–12, bringing it back at the cadence of measures 15–16 and again at the end:

EXAMPLE 5-6. Haydn, String Quartet Op. 76, No. 3, second movement, Variation IV with added bass

CD-2/TR. 6

Var. IV

81

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

(p)
(p)
(p)
(p)
(p)

87

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

93

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

FOREGROUND—MIDDLEGROUND—BACKGROUND

All kinds of musical textures have been composed for the string orchestra: homophonic, contrapuntal, melodic, as well as melody plus accompaniment. In this book we will use three terms to denote the distribution of material in an ensemble situation:

1. *foreground:* the most important voice, usually the melody, which the composer wants to be heard most prominently;
2. *middleground:* countermelodies or important contrapuntal material;
3. *background:* accompaniment, either chordal or using polyphonic or melodic figures.

The composer's skill can be measured by the way he or she orchestrates these three elements. As we saw in the previous examples, Haydn handled them so well that he did not even have to rely on dynamic markings to achieve balance among the three elements.

Handling of Foreground Material

The composer must consider each of the elements—particularly the foreground line—with regard to its tonal compass and the desired emotional intensity. If the principal idea is to be scored for strings, the ranges and registers characteristic of each of its five instruments must be considered. After these decisions have been made, the scoring of the main theme, idea, or gesture will then provide clues for the scoring of the middleground and background material.

A successful realization of this procedure can be found in the opening of the slow movement of Brahms's Symphony No. 3:

EXAMPLE 5-7. Brahms, Symphony No. 3, third movement, mm. 1–14 (strings only recorded)

CD-2/TR. 7

Poco allegretto

2 Fl.
2 Ob.
2 B♭ Cl.
2 Bsn.
2 C Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p *pp leggiero* *mezza voce* *espress.* pizz.

Fl.
Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Brahms chooses the cello to present the beautiful theme (*foreground*), which is surrounded by the remaining strings (*background*). Let us for a moment speculate on how the composer came to this decision by rescoring the excerpt in different ways.

Using the First Violin to Present the Melody

CD-2/TR. 8

EXAMPLE 5-8. Brahms, Symphony No. 3, third movement, mm. 1–8 (melody in first violin)

As shown in Example 5-8, the first violin, in this register, is relatively weak and lacks great emotional force. If the melody were scored an octave higher, the next statement of the theme would be anticlimactic and subsequent restatements that are scored an octave higher anticipated. (See pp. 116 for a similar situation in the Haydn example.)

Using the Second Violin to Present the Melody

EXAMPLE 5-9. Brahms, Symphony No. 3, third movement (melody in second violin)

CD-2/TR. 9

Poco allegretto

If the second violin were to play the theme on the G string (as in Example 5-9), the result would be intense, but of a much darker hue than the upper strings of the cello produce.

Using the Viola to Present the Melody

CD-2/TR. 10

EXAMPLE 5-10. Brahms, Symphony No. 3, third movement (melody in viola)

As shown in Example 5-10, the viola sound in this register is quite bland and, though mellow, lacks intensity and richness.

Using the Double Bass to Present the Melody

The double bass is an unlikely choice because, at pitch, it could only make a caricature of the melody, as shown in Example 5-11; in a lower register it does not have enough expressive quality to carry the tune. Starting in the later nineteenth century, solo bass passages or section solos were used for lugubrious or humorous effects.

EXAMPLE 5-11. Brahms, Symphony No. 3, third movement (melody in double bass)

CD-2/TR. 11

Poco allegretto

Brahms's use of the cellos in their lyrical and intense register (see Example 5-7) to play the melody gives the other strings an opportunity to play the soft, rapid, triplet accompaniment (*background*), and allows the composer to build up to a higher pitch level in the violin's statement of the theme. This second statement, though fuller and more heavily scored (last three measures of Example 5-7), sounds much less tense than the original. Certainly Brahms could have initially stated the theme in the violins and followed it with the cellos, but it is the stunning and vibrant effect of the cellos at the opening of the movement that captures the listener's attention and makes the opening so engaging.

Distribution of Background Material

Before we leave the Brahms example, let us look at the distribution of the background material. Many professional orchestrators recommend staying away from the register of the melody line. In many instances, especially when

foreground and background are played by instruments of similar color, this is good advice. But in this case, we must take register characteristics into consideration:

1. The foreground line is in the best register of the instrument to which it was assigned.
2. The background figures are in the palest or most nondescript registers of the instruments to which these were given, and the double-bass pizzicatos lessen the aural impact of the bass line.

If the violins and violas had been scored an octave higher, they would have attracted too much attention to the background part; they would also have anticipated the higher pitch level that the violins use for the melody after the cellos' initial statement. Instead, Brahms saves the higher violin registral color for the more important foreground statement and assigns the soft swirling background to middle-register violins and violas as the cellos dominate in their best voice.

Another important aspect to consider is the character or figuration of the accompaniment itself. Notice the radical rhythmic and expressive difference between the foreground and the background elements. The repetitiousness of the swirling accompaniment serves to add intensity to the longer notes of the melody, leaving the figure undisturbed. Some conductors may ask for a bit of "soloistic rubato" on the anacrusis to create an even freer exposition of the theme. Notice how the arpeggiation within the background accompaniment is dovetailed to create an extremely smooth and uninterrupted texture.

It must be mentioned that the flutes and bassoons clarify and support the arpeggiated harmony, a purpose that will be discussed in Chapter 8, on strings and winds. In this passage it is certainly another stabilizing and enriching element.

This passage embodies many questions the composer must answer before embarking on scoring for orchestra. There is no doubt that Brahms heard in his head exactly what he put down and did not have to go through the process of elimination we employed before deciding to assign the melody to the cellos; his decision was the result of a long and intimate relationship with the orchestra and was influenced by his having heard, conducted, and rescored many of his earlier works. The idea of choice is basic not only to the compositional but also to the orchestrational process. The more a composer knows about the tonal, registral, and technical characteristics of the instruments, the more successful and colorful his or her score.

Successful Statements of Foreground Material by Other Composers

The following examples further illustrate how orchestration can serve to clarify the form and content of a work or even a phrase by means of texture, accent, or color.

Using Textural and Timbral Changes to Differentiate between Melodic Statements

Sometimes a forceful unison or octave statement of a theme may be used in presenting the antecedent of an idea, followed by a change of texture in the consequent that emphasizes its different emotional quality. The following excerpt by Mozart shows how effective this procedure can be:

EXAMPLE 5-12. Mozart, *Eine kleine Nachtmusik*, first movement, mm. 56–62

CD-2/TR. 12

Allegro
56
Vln. 1
Vln. 2
Vla.
Vlc. D.B.
f
60
p

Coupling, a term that we have already introduced, describes two instruments playing the same passage at parallel intervals, as in the second violin and viola parts in mm. 60–62 of Example 5-12. Even though these coupled parts present only a slight change of texture and dynamic, the simple accompaniment in parallel 3rds registers a tremendous emotional contrast to the stark octaves in this Classical style.

Mozart was a master of sudden mood changes. In the following short example, a sudden cessation of the Alberti-type accompaniment figure changes the mood of the predictable, settled initial statement to a light, ethereal texture that highlights the second phrase of the theme.

CD-2/TR. 13

EXAMPLE 5-13. Mozart, *Eine kleine Nachtmusik*, second movement, mm. 1–8

Andante

Vln. 1
Vln. 2
Vla.
Vlc. D.B.

In the next example, Haydn sets off the second statement of the theme with a different texture that incorporates the cellos and basses and uses an Alberti-like figuration in the second violins. This second statement is heard an octave lower in the first violins to allow the woodwinds to be heard when they enter as part of the tutti passage that follows.

EXAMPLE 5-14. Haydn, Symphony No. 103, first movement, mm. 40–48 (m. 48 not recorded)

CD-2/TR. 14

Allegro con spirito

41

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

45

2 Fl.
2 Ob.
2 B♭ Cl.
2 Bsn.
2 E♭ Hn.
2 E♭ Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2
a 2
(a 2)

In the second movement of his Piano Concerto No. 4, Beethoven adopts a solo/tutti formal scheme, within which he contrasts the rich legato harmonies of the solo piano with a stark string unison that is played staccato:

CD-2/TR. 15

EXAMPLE 5-15. Beethoven, Piano Concerto No. 4, second movement, mm. 1–30

Using String Unisons or Octave Doublings to Create a More Powerful Melodic Statement

Composers have reinforced melodic material through doublings in a number of ways. In Beethoven's *Leonore* Overture No. 3, octaves are added to the initial melodic line until the dynamic of triple *forte* is reached.

EXAMPLE 5-16. Beethoven, *Leonore* Overture No. 3, mm. 514–531

CD-2/TR. 16

In the last movement of his symphony *Mathis der Maler,* Hindemith begins with a string unison that builds in dynamic to create great tension, which culminates in the *fortissimo* tutti chords that follow:

CD-2/TR. 17

EXAMPLE 5-17. Hindemith, *Mathis der Maler*, third movement, mm. 1–6 (strings only recorded)

3

Picc.
Fl.
Ob. 1 2
Cl. 1 2
Bsn. 1 2
Hn. 1 3
Hn. 2 4
Tpt. 1 2
3 Trb. Bs. Trb.
Perc.
Timp.
S.D.
Cym.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p cresc.
fp cresc.
ff
ff dim.
6

Doubling the first violins with the second violins gives them more body while they play in a less brilliant register. Keeping the tessitura of the cellos and basses rather low and giving the violas a contrasting rhythm *divisi* keeps them from interfering with the flow of the melody. What a beautiful way to open a slow movement with strings alone!

CD-2/TR. 18

EXAMPLE 5-18. Schumann, Symphony No. 2, third movement, mm. 1–5

In the second presentation of this sprightly tune (measures 4–6), the first violins, in their lower register, are doubled by the cellos. This timbral addition creates a feeling of greater resolution and prepares the listener for the woodwind scalar passage that follows.

CD-2/TR. 19

EXAMPLE 5-19. Shostakovich, Symphony No. 6, third movement, mm. 1–7 (mm. 6–7 not recorded)

CONTRAPUNTAL WRITING FOR STRINGS

Two or more melodies superimposed on one another result in a contrapuntal texture, or so we learn in courses on counterpoint. But in orchestral music there is a gray area between foreground melodic material, middleground melodic material, and background melodic material, a factor that can present problems for the orchestrator or composer. The difficulties are twofold: First, one must sort out which melodies belong to which of the three categories so that each melody clearly communicates to the listener whether it is primary, secondary, or tertiary material. Second, rather than becoming overwhelmed by the vast array of choices of orchestral color, one must limit one's choices—particularly if the passage is to be repeated and a different choice is used for the repetition.

As a case in point, we will study the second movement of Beethoven's Symphony No. 7.

Beethoven, Symphony No. 7

Beethoven has the first violins play the very simple tune, the seconds play the countertheme, and the violas, cellos, and double basses supply the background harmony. Even though the voices are close together in register and homogeneous in sound, this passage works successfully for two reasons:

1. Each of the three parts has its own characteristic rhythm and special articulation.
2. The foreground and middleground themes were introduced earlier without the background (the first theme was played all by itself at the beginning of the movement) and were more clearly heard at that time.

CD-2/TR. 20

EXAMPLE 5-20. Beethoven, Symphony No. 7, second movement, mm. 51–66

The manner in which these factors add clarity to this passage may help suggest ways of solving the sometimes complex problems that involve distinguishing between foreground, middleground, and background material.

Polyphonic writing for strings has been popular since the early Baroque, when the Italian masters, and later Bach and Handel, firmly established this

type of instrumental style. Since each of the voices of the string choir is technically capable of performing gestures that are almost equally elaborate, fugal, canonic, and other styles of contrapuntal writing can be successfully written for the string section. Many times the exposition of a fugue or fugato subject is assigned to the strings before it is developed, altered, or doubled by other members of the orchestra, a compositional method that has proven to be most effective.

When contrapuntal passages are to be scored for strings alone, two major points to consider are clarity and balance. These can best be achieved by:

1. placing the most important melody in the best possible register of an instrument;
2. thinning the counterpoint to let the main theme break through;
3. registerally separating theme and countertheme (one high, one low, or vice versa);
4. making the countertheme sufficiently different rhythmically from the primary theme that they don't interfere with one another when the two are stated together.

One can always mark different dynamics such as forte for the foreground and piano for the background material, but this is not necessarily as effective as the ways that are listed above.

Here are some contrapuntal passages from both the string orchestra and the full orchestra literature. Study them carefully.

Vivaldi, Concerto Grosso, Op. 3, No. 11

The piece opens with a typical fugue exposition starting with the basses and solo cello in unison, then violas, second violins, and finally the first violins—the traditional sequence of entrances. If Vivaldi had opened with the first violins, he would have been obliged to reverse the order of entrances exactly. If the second violins had begun, there would have been a choice of either first violins, then violas and basses, or violas, first violins, then basses. The first alternative described above (Vln. 1, Vln. 2, Vla., Vlc. + D.B.) was another preferred by the Baroque masters. Similar schemes (such as Vla., Vln 2., Vln. 1, Vlc. + D.B., or Vla., Vlc. + D.B., Vln. 2, Vln. 1) would be employed if the viola were to begin the fugue.

It is important to understand that in spite of the string group's homogeneity, the subject comes through because of rhythmic differences between its countersubject (middleground) and continuo or harmony (background). Since the subject is heard alone at the beginning of a fugal exposition the listener is able to focus on it. The fugal subject's strong presence is aided by easily recognizable rhythmic figures. In addition, the anacrusis-type opening gives it added carrying power against the rather active counterpoint in the other voices.

CD-2/TR. 21

EXAMPLE 5-21. Vivaldi, Concerto Grosso, Op. 3, No. 11, first movement, mm. 35–54

Bach, *Brandenburg* Concerto No. 3

In this magnificent excerpt for six violins, three violas, three cellos, and double bass, we find very sophisticated contrapuntal writing that illustrates how important rhythmic characteristics are in bringing forward the individual voices. During the Baroque era composers used a much narrower instrumental range than what is employed today; thus, emphasizing individual parts within a basically homogeneous ensemble was a challenge. Toward the end of Example 5-22 (measures 87–90), Bach brings the work to a rich homophonic climax, which provides great contrast and fulfillment to the preceding contrapuntal section.

EXAMPLE 5-22. Bach, *Brandenburg* Concerto No. 3, first movement, mm. 76–92

CD-2/TR. 22

81
Vln. 1
Vln. 2
Vln. 3
Vla. 1
p
Vla. 2
p
Vla. 3
p
Vlc. 1
Vlc. 2
Vlc. 3
D.B.

85
Vln. 1
Vln. 2
Vln. 3
Vla. 1
f
Vla. 2
f
Vla. 3
f
Vlc. 1
Vlc. 2
Vlc. 3
D.B.

89

Vln. 1
Vln. 2
Vln. 3
Vla. 1
Vla. 2
Vla. 3
Vlc. 1
Vlc. 2
Vlc. 3
D.B.

Weber, *Euryanthe,* Overture

Here is another string fugal exposition, this time from the Romantic era. As in earlier examples, the composer is careful to separate the elements by making them rhythmically distinct and, like Bach, he alternates freely between contrapuntal and homophonic passages.

EXAMPLE 5-23. Weber, *Euryanthe,* Overture, mm. 144–159

CD-2/TR. 23

Tempo I assai moderato (♩ = 88)

144

senza sord.

Vln. 2
Vla.
Vlc.
D.B.

149
senza sord.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
mf mf mf mf

153
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
f f f

156
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
p p p p ff ff ff ff ff

Bartók, *Music for Strings, Percussion and Celesta*

The exposition of this extraordinary fugue by Bartók is more complex than those in the previous examples. The composer sets up a formula of constantly moving eighth notes, created by the intersecting lines. The entrances of the subject are always easily heard, but the counterpoint balances this motion, giving the impression of a large arch. The imitative writing between the voices—both free and canonic—adds to the heightening tension, which never really settles down until the entrance of the timpani in measure 34. The lack of rhythmic definition in each voice, or, to put it more positively, the great similarity in the lines, creates an atmosphere of unruffled contemplation in the midst of harmonic tension.

EXAMPLE 5-24. Bartók, *Music for Strings, Percussion and Celesta*, first movement, mm. 1–34

CD-3/TR. 1

Andante tranquillo (♪ = ca. 116–112)

1

Vln. 3, 4

Vla. 1, 2

con sord.

pp

5

Vln. 3, 4

Vla. 1, 2

Vlc. 1, 2

con sord.

pp

9

Vln. 2

Vln. 3, 4

Vla. 1, 2

Vlc. 1, 2

con sord.

pp

13

Vln. 2

Vln. 3, 4

Vla. 1, 2

Vlc. 1, 2

D.B. 1, 2

3

con sord.

pp

17
Vln. 2
Vln. 3, 4
Vla. 1, 2
Vlc. 1, 2
D.B. 1, 2

21
Vln. 2
Vln. 3, 4
Vla. 1, 2
Vlc. 1, 2
D.B. 1, 2

26
con sord.
Vln. 1
Vln. 2
Vln. 3, 4
Vla. 1, 2
Vlc. 1, 2
D.B. 1, 2

30
Vln. 1
Vln. 2
Vln. 3, 4
Vla. 1, 2
senza sord.
Vlc. 1, 2
D.B. 1, 2

HOMOPHONIC WRITING FOR STRINGS

The distribution of the pitches in a predominantly homophonic passage is an important assignment. Spacing, register, and melodic considerations are the major factors in determining exactly who should play which pitches, especially in string writing, where the overall color is so homogeneous.

Let us first consider the scoring of some isolated chords and then study a masterful passage from the literature.

We will examine chordal spacing and pitch doubling in terms of how these might correspond to the overtone series. We give it here starting on E:

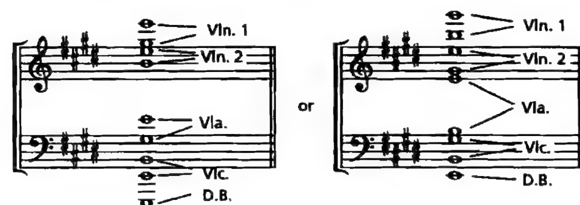
EXAMPLE 5-25. Overtone Series on E



A large tutti string chord could be effectively spaced:

EXAMPLE 5-26. Using the Overtone Series to Space a Chord

CD-3/TR. 2



Both chords can be played *piano* or *forte*. The first would sound a bit darker than the second because of the lower octave of the basses and the wider spacing at the top, but the difference is not great. All instruments are assigned a traditional place in the distribution. Notice that greater space is usually left between pitches of the lower instruments than between those of the upper instruments—just as there are greater distances between the more sonorous lower partials than between the upper partials of the overtone series.

Less spread between chord members gives the composer greater choices. A progression using closely spaced chords such as the following may be scored in one of the following ways:

EXAMPLE 5-27. Closely Spaced Chords



1. Straightforward scoring—violin I, soprano; violin II, alto; viola, tenor; cello, bass; double bass, doubling the cello an octave lower. This scoring would result in a rather nondescript setting if the dynamic was *p* to *mf*, but would prove very bass-heavy if the dynamic was loud, since the violas, cellos, and basses are in a much better register than the violins.

2. Violas *divisi* take the upper two parts while the cellos *divisi* take the lower two. The result of this combination would be a very mellow, darkish sound.
3. Number 2, but adding the bass an octave lower, which would greatly darken the line.
4. The first violins on the soprano with the second violins or the violas *divisi* playing the alto and tenor part would give a slightly lighter but still subdued color to the progression.
5. All cellos, with the basses doubling the bass line at pitch, would, of course, be very intense.
6. The entire progression could be transposed up one octave, then two octaves, without using the double bass at all, and become quite sparkling.

If there were a first-inversion chord in Example 5-27, we would have an additional doubling problem, since, as we have learned in basic theory courses, it is not common-practice style to double the bass (the third) except when the chordal root is scale degree $\hat{1}$ (VI^6), $\hat{2}$ (VII^6), $\hat{4}$ (II^6), or $\hat{5}$ (III^6). In the often-used I^6, IV^6, and V^6 chords, special attention should be given to spacing and doubling so that the bass is not doubled in a four-voice texture; if there are more than four voices, the third of the chord (its bass) would invariably be doubled somewhere to strengthen it. In this case, it is advisable to double it near the bottom of the texture to bring out the "open" sound so characteristic of this inversion, as in the chords that are marked "good" below. The chords designated "not good" show that the third of the chord is overdoubled, thereby weakening the first-inversion effect.

EXAMPLE 5-28. Doubling in First-Inversion Chords



Let us now consider how best to score a string melody within an orchestral work.

What can be done to strengthen this melody?

EXAMPLE 5-29. Melody to be Scored



1. It can be played by the first violins without accompaniment.
2. It can be played by the second violins and doubled by the first an octave higher.
3. It can be doubled at the unison by another instrumental combination:
   a. violins 1 and 2
   b. violins and violas

c. violins and cellos
d. violas and cellos
4. It can be played *sul G* on the violin.
5. It can be played as a viola or a cello solo, since both instruments would be more intense in that register than the violins.
6. It could be distributed over four or five octaves and played by all five strings.
7. It could be performed in unison by all the violins, violas, and cellos.

Tchaikovsky, *Serenade for Strings*

Now let us examine the beginning of the *Serenade for Strings* by Tchaikovsky to see how he handled some of these issues.

EXAMPLE 5-30. Tchaikovsky, *Serenade for Strings*, first movement, mm. 1–36

CD-3/TR. 3

At [A], the theme is presented fully and richly harmonized. The double stops on all instruments would certainly be playable *non divisi*, but usually the second violins, violas, and cellos are divided while the violins are not, since *divisi* would weaken the first violin line. Notice that the melody notes of the first violin are always doubled, either by the first violins themselves or by one of the other string sections. In measures 1 and 2, the second violin (lower notes) doubles, and in measures 4 and 5 the viola doubles. The composer emphasizes the harmony rather than the melody in measures 3 and 6 by the phrasing and the dovetail position of the second violin (that is, its pitches are in between those of the first violins); the second violins' pitches are in turn reinforced by doublings in the violas and cellos. Notice the spacing of the very first chord, which creates an intense but quite bright sound. The chords in measures 7 and 8 are sonorous but a bit more mellow. The dovetailing of violas and second violins in measure 8 emphasizes the E^4, a melody note, which is much stronger played by the violas than it would be if played by the second violins.

In measure 8, a scale in octaves takes us to the second statement of the melody ([B]), this time played in the bass register. Great intensity is created by the rather high double basses, and the thin texture that accompanies the tune played *ff* cannot interfere with it since all violins and violas are in a nonbrilliant register. The big chord in measure 15 sounds stunning after this pale, subdued harmony. Notice the distribution of this chord and the ease with which it can be performed; no problem fingerings are encountered for any instrument. Since

any double-bass chord like those of the upper strings in this measure would have to be played *divisi*, the composer instead has chosen to assign to the instrument a single well-placed tonic note. The low C on the cello is sonorous enough to carry as the true bass note of the chord.

From [C] to [D] Tchaikovsky achieves a diminuendo by his scoring. From measures 17 to 22 the close voicing, especially in the high cellos, gives a tense rendition of the theme and harmony. From measure 18 to [D] the sound is mellow, and even though it remains rather loud and intense, the homogeneous quality of the string playing makes the passage sound as if it came from one instrument.

From [D] to the end there is a marked diminuendo, in which a cadential formula is repeated three times. All instruments are in a register where a soft dynamic is easily possible, and the thinning out is emphasized by the dropping out of the bass each time it reaches the tonic note E. Notice the articulation change in the basses from measure 32 to measure 33. Here the double basses do not slur but bow the high E. The articulation allows the E to sound a little longer, and their dropping out in the ensuing measures is thus even more pronounced, since the chords in the other strings are held.

Grieg, *Peer Gynt* Suite No. 1

Another example of effective strict homophonic writing for strings is the excerpt from Grieg's *Peer Gynt* Suite No. 1. Every note is doubled at the octave, as if the piece were played on the organ with an eight-foot stop and a four-foot stop doubling the original version an octave higher. In order to articulate clearly two phrases in each of the four measures, Grieg doubles the strings differently in the antecedent and the consequent. For instance, in measures 19–20 and 23–24, the second violins double the first with an added octave instead of providing more harmony. To study this example more closely, you might wish to make a simple four-part reduction for piano, and then compare it with the original orchestration.

EXAMPLE 5-31. Grieg, *Peer Gynt* Suite No. 1, "Aase's Death," mm. 17–24

CD-3/TR. 4

21
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
ff

The lush romantic sound for strings is an important color to master. To that end, analyze the following string works for spacing, articulation, and disposition of foreground, middleground, and background material:

ADDITIONAL PASSAGES FOR STUDY

Bartók, *Divertimento*
Bloch, Concerti Grossi Nos. 1 and 2
Britten, *A Simple Symphony*
Dvořák, Serenade in E major for Strings, Op. 22
Honegger, Symphony No. 2 for Strings and Trumpet
Mahler, "Adagietto" from Symphony No. 5
W. Schuman, Symphony for Strings No. 5

Penderecki, *Threnody for the Victims of Hiroshima*

A work such as *Threnody for the Victims of Hiroshima* by Krzysztof Penderecki can be considered a prototype of a mid-twentieth-century work for strings. The composer specifies the exact number of instruments needed (twenty-four violins, ten violas, ten cellos, eight basses), and he often divides a particular section so that each instrumentalist plays a separate pitch. Color is the important parameter here; Penderecki takes full advantage of everything the instruments can do, and invents some new tricks as well.

The specifications that precede the actual music must be considered as part of the score, since they explain the unusual markings that are found in it. In the score, the thick horizontal lines indicate approximate range and position of the cluster to be executed by the designated *divisi* instruments. The exact positions are given below each cluster.

EXAMPLE 5-32. Penderecki, *Threnody for the Victims of Hiroshima*, end

a. GUIDE TO THE NOTATION

Symbol	Meaning
†	sharpen a quarter tone
‡	sharpen three quarter tones
	flatten a quarter tone
	flatten three quarter tones
	highest note of the instrument (no definite pitch)
↑	play between the bridge and tailpiece
	arpeggio on 4 strings behind the bridge
	play on the tailpiece (arco) by bowing the tailpiece at an angle of 90¡ to its longer axis
	play on the bridge by bowing the wood of the bridge by bowing the wood of the bridge at a right angle at its right side
	percussion effect: strike the upper sound board of the violin with the nut or the fingertips
⊓V	several irregular changes of bow
	molto vibrato
	very slow vibrato with a 1 4 tone frequency difference produced by sliding the finger
	very rapid nonrhythmicized tremolo
ord.	ordinario
s.p.	sul ponticello
s.t.	sul tasto
c.l.	col legno
l.batt.	legno battuto

CD-3/TR. 5

b. LAST TWO PAGES OF THE PIECE

64 65 66

12 Vln. 1-12 senza sord. c.l. *ff* *sub. pp*

13-24 12 Vln. s.p. *p*

10 Vla. 1-10 s.p. *ff* *sub. p*

10 Vlc. 1-10 con sord. *mf*

10 Vlc. 1 2 3 4 5 6 7 8 9 10 *ff*

8 D.B. 1-8 c.l. *f*

10 D.B. 4 6 7 8

10" 6" 10"

67 68 senza trem. 69

12 Vln. 1-12

ff sub. pp

13-24

12 Vln.

pp

10 Vla. 1-10

f

senza trem. s.p.

p

10 Vlc. 1-10

sub. p

pp

arco s.p.

senza trem.

8 D.B. 1-8

sub. p

mf

sub. pp

30" 8" 10"

70

s.p. ord. s.t.

tutti archi

fff pppp

24 Vln. 1-24

10 Vla. 1-10

10 Vlc. 1-10

10 D.B. 1-8

30"

ADDITIONAL PASSAGES FOR STUDY

Babbitt, *Correspondences* (strings with tape)
H. Dutilleux, *Mystère de l'instant* (strings with percussion)
Foote, Suite in E minor
Grieg, *Holberg* Suite
Holst, *St. Paul's* Suite
Lutosławski, *Funeral Music*
Mendelssohn, Octet for Strings
R. Shchedrin, *Carmen* Suite (strings with percussion)
F. Sowande, *African* Suite
Tchaikovsky, *Serenade for Strings*
Warlock, *Capriol* Suite

USING THE STRING CHOIR TO ACCOMPANY A SOLOIST

Because of its homogeneous quality as well as its great technical ability and dynamic range, the string choir is frequently used to accompany an instrumental or vocal soloist, a chorus, or a group of instruments in a purely orchestral work. Hundreds of different scorings have been created for this purpose, and we shall examine some of the more popular ones. The possibilities are almost limitless, but a quick study of some traditional formulas may give some idea of what can be done.

Mendelssohn, *Elijah*

Mendelssohn uses a simple homophonic on/off-beat accompaniment in this passage:

CD-3/TR. 6

EXAMPLE 5-33. Mendelssohn, *Elijah*, "It is enough," mm. 1–9

Adagio (♩=66)

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

In the next excerpt sustained harmony notes in the violas and basses are overlaid with an agitated rhythmic figure in the violins:

EXAMPLE 5-34. Mendelssohn, *Elijah*, "Hear ye, Israel," mm. 1–7

CD-3/TR. 7

Adagio (♪ = 80)

Fl.
Ob.
A Cl.
Bsn.
Vln. 1
Vln. 2
Vla.
Soprano solo
Vlc. D.B.

Hear ye, Is - ra - el,

Here the sustained harmony notes are overlaid with an arpeggiated violin figure:

CD-3/TR. 8

EXAMPLE 5-35. Mendelssohn, *Elijah*, "He watching over Israel," mm. 1–5

Allegro moderato (♩=126)

Ob.
A Cl.
Bsn.
D Hn.
D, A Timp.
Vln. 1
Vln. 2
Vla.
S
A
T
B
Vlc.
D.B.

sempre legato

He, watch-ing o - ver Is - ra-el, slum-bers not nor sleeps;

Mozart, *The Marriage of Figaro*

Agitated string counterpoint highlights the frantic action that takes place in the opera at that moment:

EXAMPLE 5-36. Mozart, *Le Nozze di Figaro*, Act II, No. 14, mm. 1–13 | CD-3/TR. 9

Allegro assai

1

Vln. 1

Vln. 2

Vla.

SUSANNA

CHERUBINO

Vlc.
D.B.

pp

5

Vln. 1

Vln. 2

Vla.

SUSANNA

A-pri-te presto, a - pri-te, a-pri-te, è la Su - san-na; sor-ti-te, sor - ti-te, sor-ti-te, via sor-

CHERUBINO

Vlc.

Vlc.
D.B.

Bizet, *Carmen*

In the famous "Habanera," the cellos provide the ethnic rhythm characteristic of the dance while the rest of the strings support the singer both melodically and harmonically playing pizzicato. Notice that the singer can execute her part without orchestral interference.

CD-3/TR. 10

EXAMPLE 5-37. Bizet, *Carmen*, Act I, "L'amour est un oiseau rebelle," mm. 1–8

In the prelude to the opera, Bizet accompanies the tune that is played by the cellos (which is doubled by trumpet, clarinet, and bassoon, not shown in the short score given here) with a particular device—now a cliché—to invest the passage with a suitably ominous quality: a tremolo accompaniment played by the upper strings.

EXAMPLE 5-38. Bizet, *Carmen*, Prelude, mm. 121–131

CD-3/TR. 11

Andante moderato

121

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

pizz.

127

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

Fauré, Requiem

In order to produce a somber background, only the lower strings accompany the melody in this excerpt. Note the unison violas and first cellos. This scoring provides a dark-hued harmonic background for the Requiem text. The strings often double the organ in this piece, as in the passage quoted below.

CD-3/TR. 12

EXAMPLE 5-39. Fauré, Requiem, "Introit and Kyrie," mm. 18–25

Transcribing from Piano to Strings

You may be called on to transcribe an accompaniment from piano to strings. There are a variety of ways to accomplish this task, but the most important consideration is realizing the composer's intent without introducing any distortion of it. Of course, piano figuration is not always simple to transcribe, but one must be careful to uphold the spirit of the original accompaniment, even though its figuration is of necessity somewhat adapted for the strings. The dovetailing of parts can be used to re-create the smoothness that a single player can achieve on a single instrument. Obviously, one must not dovetail parts where an accent is required. The piano's sustaining pedal must also be translated for string orchestra in an appropriate fashion.

First, let us see how the sustaining pedal's effect may be simulated:

EXAMPLE 5-40. Transcribing to Simulate Sustaining Pedal

a. PIANO VERSION



b. THREE STRING VERSIONS (PLAYED WITHOUT PAUSE)

CD-3/TR. 13

Now let us take a few piano accompaniments to songs and create suitable string scorings for them. Before we do this, it is important to point out that there are many simple piano accompaniments, such as afterbeats, sustained harmonies, and certain figurations that can simply be copied out into string parts. Others, such as the ones given below, require more thought. Study these carefully.

EXAMPLE 5-41. Schubert, "Rückblick," mm. 1–2

a. PIANO VERSION

Nicht zu geschwind

Voice

Piano

p fp

CD-3/TR. 14

b. TWO STRING VERSIONS (PLAYED WITHOUT PAUSE)

1 Not too fast

Vln. 1 pizz. p arco fp

Vln. 2 pizz. p arco fp

Vla.

Vlc.

D.B. pizz.

2 Not too fast

Vln. 1

Vln. 2

Vla.

Vlc. p f

D.B. pizz. sf

Repeated chords in the strings have the same effect as those written for piano and therefore sound idiomatic, especially at this fast tempo.

EXAMPLE 5-42. Brahms, "An ein Veilchen," mm. 1–3

a. PIANO VERSION (A GOOD EXAMPLE OF THE DOVETAILING OF PARTS)

Andante

Voice

Birg, o

sehr zart (delicatamente)

Piano

p

b. STRING VERSION

CD-3/TR. 15

EXAMPLE 5-43. Brahms, "O liebliche Wangen," mm. 1–3

a. PIANO VERSION

b. STRING VERSION

CD-3/TR. 16

Like the Brahms excerpt in Example 5-43, this accompaniment lends itself much better to repeated notes in the string version.

EXAMPLE 5-44. Saint-Saëns, "L'Attente," mm. 1–3

a. PIANO VERSION

Allegro agitato

Voice

Monte, é - cu -

Piano

pp

CD-3/TR. 17

b. STRING VERSION

Allegro agitato

Vln. 1

pp

Vln. 2

pp

non div.

Vla.

pp

Vlc.

pp

D.B.

pp

The composer's taste is the final arbiter in choosing the most effective scoring for a particular passage. We will again find that this is true in the pieces discussed in Chapters 8, 11, 14, and 15, which, like this chapter, deal directly with scoring for particular ensembles and for full orchestra. Studying principles that have proven to be successful helps us to select the best instruments and their distribution in terms of melodic material, as well as to decide on the most appropriate surrounding texture. One may profit from adopting the tried-and-true ways, or, armed with the knowledge of what one is rejecting, by searching for new solutions. The overriding consideration is realizing that orchestration must serve the structure of a work. It must clarify the form and support the tonal flow by what it can uniquely contribute: the element of color.

ADDITIONAL PASSAGES FOR STUDY

String Orchestra:

Britten, *Four Sea Interludes* from *Peter Grimes*, "Dawn," beginning (flute-violin combination)

Britten, *Serenade for Tenor, Horn and Strings*

D. Diamond, *Rounds for Strings* (contrapuntal writing in last movement)
Grieg, *Holberg* Suite
Stravinsky, Concerto in D
Vaughan Williams, *Fantasy on a Theme of Thomas Tallis* (large string combinations)

Pizzicato in Foreground and Background:

Bartók, *Music for Strings, Percussion and Celesta*, second movement
Bruckner, Symphony No. 3, third movement (cello-bass pizz.)
Casella, *Paganiniana*, second movement, at [65] (left-hand pizz.)
Grieg, *Peer Gynt*, Suite No. 1, "Anitra's Dance"
Holst, *St. Paul's* Suite, second movement
Shostakovich, Symphony No. 9, first movement (violas, cellos, basses)
Tchaikovsky, *Romeo and Juliet*, mm. 38–51
Wagner, *Tannhäuser*, Act III, Scene 2, "Wolfram's address," mm. 38ff. (strings and harp)

Scoring for One or a Combination of String Instruments Effectively Negotiating an Important Melodic Idea:

Chausson, Symphony in B♭, third movement, at [B] (high violins)
Rimsky-Korsakov, *Le Coq d'or* Suite, opening of third movement (long viola solo)
Sibelius, Symphony No. 1, third movement, 14 mm. before [K] (double-bass solo)
R. Strauss, *Also sprach Zarathustra*, beginning at the fugue (*divisi* double basses)
R. Strauss, *Death and Transfiguration*, mm. 428–475 (high violins)
Verdi, *Otello*, Act IV, at [U] after "Ave Maria"
Wagner, *Der fliegende Holländer*, Overture, mm. 353–361 (violin and viola)

Additional Works Featuring Contrapuntal Writing for Strings:

Françaix, *Symphonie d'archets*, first movement
Lutosławski, *Funeral Music*, beginning
Riegger, Symphony No. 3, fourth movement, 10 mm. after [Y] (*Allegro feroce*, mm. 1–46)
N. Rorem, String Symphony (throughout)

Additional Works Using *Divisi* Passages:

Debussy, *Nocturnes*, "Sirènes," at [1]
Wagner, *Lohengrin*, Prelude, beginning and end
Weber, *Euryanthe*, Overture, mm. 129–143 (violins and viola)

Works Incorporating More Contemporary String Writing:

S. Adler, Symphony No. 5, third movement, "The Future"
M. Borkowski, *Limits* for Orchestra (many string effects)
M. Colgrass, *As Quiet As*, second movement (*col legno, col legno battuto*, harmonics, *jeté*)
A. Goehr, *Romanza* for Cello and Orchestra, mm. 52–55 and 363–366
Messiaen, *Chant des désportés* (extra-large string section)

The following two works are typical of postwar Polish string writing:

Lutosławski, *Paroles tissées*
Penderecki, *Dies irae*

6

THE WOODWIND CHOIR (REED AEROPHONES)

> The story of the orchestra resembles an old family chronicle, or more exactly, the story of the rivalry between a large number of families. Eventually, they unite for a common aim and the establishment of regular affairs of state.*

Composed of largely heterogeneous instruments, the woodwind choir is perhaps the most quarrelsome of all the families within the orchestra. It is difficult for wind instruments to tune with one another, and only the finest players can accomplish any kind of balance or blend of their colorful and diverse timbres.

Even the word *woodwinds* does not accurately describe this family. Although all the major instruments in the group, with the exception of the saxophones, were, at one time, actually made of wood, this is no longer the case. Flutes are now made of all kinds of metals, even gold, silver, and platinum; the cheaper clarinets are made of plastic. The saxophones, being a relatively recent invention (nineteenth century), have always been made of brass, but we will classify them under the rubric "woodwinds" since they are related to the group in so many ways. It is interesting to note, however, that a classic text like Cecil Forsyth's *Orchestration* (1914) discusses of the saxophone in the brass instrument chapter.

CONSTRUCTION

Before delving into the details of construction and categorization of woodwind instruments, we will look very briefly at the principles on which they function.

Without getting too much into acoustical details, one can state that a body of air will vibrate when set in motion because it possesses both elasticity and inertia. The vibrating string communicates only a very small amount of sound. In order to project greater volume, that sound must be amplified by passing through some sort of soundbox. A conical or cylindrical tube does not require this kind of amplification because the vibrating air column within it communicates the sound at a desired amplitude directly through an opening in the tube. It is, therefore, imperative that one know the mode of producing sound for each of the woodwinds—that is, through what kind of tube the air column passes once it is set in motion—in order to understand each instrument's timbre, range, registral strength, amplitude, agility, and articulation possibilities.

*Paul Bekker, *The Orchestra* (New York: W. W. Norton, 1963), p. 15.

The tube has to have holes, or openings, cut according to exact mathematical requirements in order to produce all the semitones between the fundamental tone and the first overtone (the octave above). However, the holes are too far apart for the hand to cover them. An early primitive mechanism compensated somewhat for this inadequacy, but no real advance in the construction of woodwind instruments was made until the nineteenth century. Theobald Boehm (1794–1881) invented a mechanical system of interlocking keys and levers, readily worked by the fingers, that made it relatively simple to reach all the notes on wind instruments. The Boehm system has been continually perfected; virtually any skips, trills, or tremolos can performed on any woodwind instrument today.

CLASSIFYING WOODWIND INSTRUMENTS

It is possible to classify the woodwind choir in at least five ways:

1. by families
2. by the kind of reed used (single or double)
3. by the shape of the pipe
4. by the interval the instrument overblows
5. by whether or not the instrument transposes

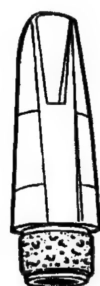
Classification by Families

1. The flute family*: piccolo, flute, alto flute, bass flute
2. The oboe family: oboe, oboe d'amore, English horn, heckelphone, bassoon, contrabassoon
3. The clarinet family: C, D, E♭, B♭, and A clarinets, alto clarinet (E♭), bass clarinet (generally in B♭, sometimes in E♭), contrabass clarinet (B♭ or E♭), basset horn (F)
4. The saxophone family: sopranino (usually in E♭, transposed up a minor 3rd), soprano (B♭), alto, (E♭), tenor (B♭), baritone (E♭), and bass saxophones (B♭)

Classification by Reeds

In any discussion of reed or nonreed wind instruments, of prime importance is the *embouchure*, a word that refers to the method of blowing into the instrument to set the air column in motion either directly (flutes) or by the reed mechanism or mouthpiece (all other woodwinds). The pitch variation—or intonation—is dependent on the embouchure, since it is largely controlled by the lips. The pitch can also be slightly modified by manipulating the mouthpiece joint, or at times the other joints, thereby changing the length of the instrument. Pulling

*The recorder consort (called the flageolet family)—sopranino, soprano, alto, tenor, bass—is not used in the modern symphony orchestra.




SINGLE REED: CLARINET MOUTHPIECE AND REED



DOUBLE REED: OBOE



DOUBLE REED: BASSOON

out the mouthpiece (or *head joint* on the flute) slightly lengthens the instrument and therefore lowers the pitch; pushing it in raises the pitch a bit.

1. Nonreed woodwinds: all flutes (plus recorders)
2. Single reeds: all clarinets and saxophones
3. Double reeds: oboe, oboe d'amore, English horn, heckelphone, bassoon, and contrabassoon

Classification by the Shape of the Pipe

1. Cylindrical tube (essentially, a straight pipe): flutes and clarinets*
   a. Even though the flute is closed at one end, the embouchure hole is so near the closed end that it is called an open cylindrical pipe.
   b. The clarinet is called a closed cylindrical tube because its mouthpiece closes the tube at one end.
2. Conical tubes (the pipe is larger at one end than at the other): oboes, English horns, bassoons, and saxophones

Classification by Overblowing

Overblowing is the woodwind equivalent of touching a node on a string at the halfway mark, producing the first harmonic. On the wind instrument, this is accomplished by blowing with more force, thereby compelling the vibrating air column to split fractionally.

1. All conical pipe instruments and flutes overblow the octave
2. All clarinets overblow the twelfth

*Acousticians quibble about classifying the flute and clarinet as pure cylindrical shapes, for neither really is. The flute is actually a cylindro-conical pipe, but for our purposes, the simpler definition will suffice.

Classification by Transposition

1. Nontransposing woodwinds: flute, oboe, and bassoon
2. Transposing woodwinds
   a. Instruments that never change their interval of transposition:
      - Piccolo
      - Bass flute
      - Contrabassoon
      - Oboe d'amore in A (transposes like the A clarinet)
      - English horn in F (transposes like the French horn in F)
      - Alto flute in G
      - Alto clarinet in E♭ (transposes like the alto saxophone in E♭)
      - Bass clarinet in B♭
      - Contrabass clarinet in E♭
      - Soprano saxophone in B♭ (transposes like the B♭ clarinet)
      - Alto saxophone in E♭
      - Tenor saxophone in B♭(transposes like the bass clarinet in B♭)
      - Baritone saxophone in E♭ (transposes like the contrabass clarinet in E♭)
      - Bass saxophone in B♭

   b. Instruments that change their interval of transposition:
      - Clarinet
      - Bass clarinet

      Since there is more than one variety of these two instruments, the score and part must be clearly marked as to which clarinet or bass clarinet should be used in a particular passage or piece.

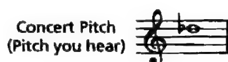
THE PRINCIPLE OF TRANSPOSITION

A transposing instrument produces pitches that sound different from what is notated in the score. It is up to the composer or orchestrator to transpose the part so that the player can simply read it off the page, fingering it naturally on the instrument but producing the pitches that the music demands.

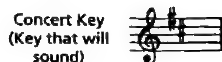
It is therefore important to distinguish between the *written pitch*, the note one sees on a page, and the sounding or *concert pitch*, the resulting pitch emanating from a transposing instrument. (The key in which the entire orchestra is playing is called the *concert key*.) The following example shows the difference between written and sounding pitches on the B♭ and A clarinets.

EXAMPLE 6-1. Written Pitch and Concert Pitch



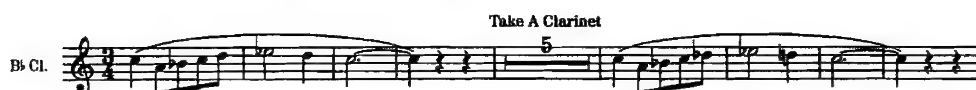






In the melody in Example 6-2, the composer writes the same notes for both the B♭ and A clarinets, realizing that the two phrases will sound at different pitch levels (see Example 6-3) since the two instruments transpose at different intervals. Notice also that the composer has provided a long rest for the clarinetist to change instruments.

EXAMPLE 6-2. Written Pitches



EXAMPLE 6-3. Sounding Pitches



If the composer had wanted the clarinetist to play both phrases on the same clarinet, the music would have to be notated as in Example 6-4.

EXAMPLE 6-4. Written Part



Before the mechanical systems on these instruments were perfected, instruments at different transpositions were used to avoid the need of playing too many accidentals. Today, switching clarinets, especially within a single work, is quite rare. Copland, however, alternates between the B♭ and A clarinets in *Appalachian Spring*.

The basic rule for all transposing instruments is that the written C will sound the pitch (the fundamental) by which the particular instrument is designated.

TABLE OF TRANSPOSITIONS

	Written Pitch	Sounding Pitch	
B♭ Clarinet B♭ Soprano saxophone			a major 2nd below the written pitch
A Clarinet			a minor 3rd below the written pitch
E♭ Sopranino saxophone E♭ Clarinet			a minor 3rd above the written pitch
D Clarinet			a major 2nd above the written pitch
F English horn F Basset horn			a perfect 5th below the written pitch
G Alto flute			a perfect 4th below the written pitch
E♭ Alto clarinet E♭ Alto saxophone			a major 6th below the written pitch
B♭ Tenor saxophone B♭ Bass clarinet*			a major 9th below the written pitch
E♭ Baritone saxophone			a major 13th below the written pitch
B♭ Contrabass clarinet B♭ Bass saxophone			two octaves and a major 2nd below the the written pitch
Piccolo			an octave above the written pitch
Contrabassoon			an octave below the written pitch

*If the bass clarinet is written in the bass clef, it sounds only a major 2nd below the notated pitch. If, by chance, one encounters a bass clarinet in A, it is useful to know that it sounds a minor 10th below the notated pitch if written in the treble clef, or a minor 3rd below if written in the bass clef.

In order to *sound* C major, the signature:

for an instrument in B♭ must be D major.
for an instrument in A must be E♭ major.
for an instrument in E♭ must be A major.
for an instrument in D must be B♭ major.
for an instrument in F must be G major.

Almost all non-octave-transposing woodwinds transpose down, the exceptions being the piccolo clarinets in D and E♭ and the sopranino sax in F. In addition, all instruments designated tenor, baritone, or bass automatically add an octave—or two octaves in some cases—to their transposition, if they are notated in the treble clef.

The decision to use a clarinet in A, B♭, D, or E♭ is usually based on the key of the work. Works in flat keys usually call for B♭ clarinets and E♭ piccolo clarinets; those in sharp keys are best served by A clarinets and D piccolo clarinets. Since tonal schemes today are no longer rigid or predictable, this consideration is less important, which frees the composer to use either set of instruments. The larger (A, D) clarinets have a slightly more luscious sound, but the difference is not greatly discernible. Indeed, the irrelevance of the key relationship has existed since the advent of highly chromatic writing in the latter half of the nineteenth century. English horns, saxophones, alto and bass flutes, and piccolos and contrabassoons, always transpose to the same interval.

PLAYING TECHNIQUES

Intensity and volume vary with each woodwind instrument, depending on the range and particular register in which the passage appears. Intonation, dynamics, and in some instances articulation, trills, and technical versatility are much harder to control in extreme registers than in the middle ranges of all of the instruments; this is truer of the highest register than of the lowest. For example, the flute and piccolo are very weak in volume in their lowest octave, whereas the oboe and bassoon should not be called on to perform *pianissimo* in the lower fifth of their range. On the other hand, the clarinet uniquely possesses the full dynamic spectrum in all its registers, from top to bottom.

Vibrato

Just as the string tone is enriched by the use of vibrato, so is the woodwind and, for that matter, the brass instrument's tone. On wind instruments, vibrato is produced by starting a rapid pulsation of the air column in one of four different ways: (1) by movement of the lips and jaw (normal for clarinet and saxophone, seldom for oboe and bassoon); (2) by movement of the throat muscles (sometimes for flute); (3) by movement of the abdominal muscles (normal for oboe and bassoon); or (4) by a combination of movements of the throat and abdominal muscles (normal for flute). The first way is the most difficult to achieve effec-

tively, for it may upset the embouchure; therefore, whenever possible the other methods are preferred.

A composer or orchestrator does not have to specify the use of vibrato in a score; a professional wind player will naturally color a pitch with vibrato to make it rich and round. The width of the vibrato is a matter of style and good taste and can be modified by a professional player. If a composer wishes to have no vibrato in a certain passage, he or she must indicate this by marking the score *senza vibrato, non vibrato,* or as Copland does, "white tone." When the player is to return to a normal way of playing (with vibrato), the indication *con vibrato* or "normal" (*normale*) should appear.

Here is a famous "white tone" passage from Copland's *Appalachian Spring*:

EXAMPLE 6-5. Copland, *Appalachian Spring*, mm. 1–4

CD-2/TR. 24

1 Very slowly (♩ = 66)
Fl. 1
Fl. 2
2 Ob.
Solo
A Cl. 1
p semplice ("white" tone)
A Cl. 2
2 Bsn.

Articulation, Tonguing, and Phrasing

Articulation on woodwinds is effected by *tonguing*. A tone on a woodwind instrument is initiated when the tongue touches the roof of the mouth and immediately pulls back, as if one were saying the syllable "tuh." (There are instances, depending on the instrument, register, and dynamic, in which the syllable "duh" is used instead.) The tone is stopped, either by returning the tongue to its original position, hitting the side of the reed with it, or by cutting off the supply of breath. When there are no slurs marked in the music, the notes are tongued or articulated separately. When slurs are present, the player performs all the pitches within the slur in one breath—like the string player on one bow—and tongues only the first note. (A wind player is able to play many more notes in one breath than a string player can play on one bow, due to the limitations of bow length.) This in-one-breath articulation is called legato playing, though not all in-one-breath playing on wind instruments is necessarily legato.

Differences in articulation can produce quite different effects. For instance, the legato playing called for by the slurring in Example 6-6b would sound much smoother than the more sprightly, mostly tongued version that Beethoven actually wrote (Example 6-6a).

CD-2/TR. 25

EXAMPLE 6-6. Beethoven, Symphony No. 8, first movement, mm. 1–4

a.



b.



There are several variations in straight tonguing, all of which are notated in a particular way.

Staccato

When a dot is placed above or below a notehead, the player will articulate a very short, staccato note, with a natural separation between notes.

CD-2/TR. 26

EXAMPLE 6-7. Staccato Tonguing



Soft Tonguing

In some instances, slurs are placed over repeated notes that have dots or dashes, calling for "soft tonguing." With dots over the notes under the slur, the articulation is slightly "harder" than when dashes separate the notes. The effect is similar to slurred staccato and *louré* on strings, played on one bow. Here they are performed in one breath.

CD-2/TR. 27

EXAMPLE 6-8. Soft Tonguing



Double Tonguing

In very fast passages, the player will double tongue and, especially in fast triplet passages, will triple tongue. The syllables that are used to articulate double and triple tonguing are "te" and "ke" in various combinations:

CD-2/TR. 28
INDEX 1 / 0:00

EXAMPLE 6-9. Double Tonguing



EXAMPLE 6-10. Mendelssohn, Symphony No. 4, first movement, mm. 1–6 (triple tonguing)

CD-2/TR. 28
INDEX 2 / 0:08

Allegro vivace
teteke or tekete

Fl. Ob. A Cl. Bsn.

Dynamic "Envelopes"

The usual way of releasing a tone on a woodwind instrument is to return the tongue to its original position. There is a way of using the tongue to create a special effect that, although not exclusive to the woodwinds, is best for these instruments. It consists of *sfp*, *sf* > *p* < *f*, or vice versa, a strong attack that is immediately decreased in volume and may be increased again.

EXAMPLE 6-11. Beethoven, Symphony No. 1, first movement, mm. 1–4

CD-2/TR. 29
INDEX 1 / 0:00

Adagio molto (♪ = 88)

Fl. Ob. C Cl. Bsn.

EXAMPLE 6-12. Dynamic "Envelope"

CD-2/TR. 29
INDEX 2 / 0:27

2 Fl. 2 C Cl.

Flutter Tongue

Flatterzunge (GER.); *Frullato* (IT.)

This special effect is not unlike the unmeasured tremolo for strings in notation and purpose. Of course, the sound is different, more like a whir. Flutter tonguing can be produced either by a rapid roll or fluttering of the tongue, or by a prolonged guttural "r" rolled in the throat. It is relatively easy to execute on all flutes, clarinets, and saxophones, but more difficult on oboes and bassoons, even though it is used in twentieth-century literature quite often. Flutter tonguing may be required on long notes, or an entire passage (fast or slow) may be played with flutter tonguing. The parts must be marked like an unmeasured string tremolo, with three slashes through the stems or above whole notes, or the words "flutter tongue" (abbr. *Flt.*) must be written in the score above the passage. Sometimes both of these markings are used.

CD-2/TR. 30

EXAMPLE 6-13. Stravinsky, *Le Sacre du printemps*, Part I, "Cercles mystérieux des adolescentes," at [103]

Muting

None of the woodwind instruments have mutes, yet composers have asked for muted sounds. Wind players usually accommodate by lightly stuffing a cloth or handkerchief into the opening of the instrument, or by covering the open end of the bell with their hands. Obviously, this is not possible to do on the flute.

Multiphonics and Other Special Effects

Multiphonics

During the latter part of the twentieth century many special techniques have been developed for woodwind instruments. The most far-reaching is multiphonics, that is, the simultaneous sounding of more than one note. Not everyone can perform these, and some of the "double stops" can be produced only on certain models of instruments. Even though some multiphonics have been called for in newer orchestral and band literature, the greater demand has been in solo and chamber music. Therefore, this technique will be discussed briefly in the sections of Chapter 7 that investigate each instrument.

Microtones

Another rather recent innovation is the use of microtones and special shadings of a pitch. This is more common for orchestral winds, but, like multiphonics, microtones are very difficult to play. Some players have trick fingerings by which they can produce the desired microtones or pitch shadings. Some examples of these will appear in Chapter 7.

Glissandi

Glissandi are most successful on the clarinet and saxophone, but only in an upward direction; the downward glissando is effective only between neighboring pitches. Flutes, oboes, and bassoons, as well as clarinets, can depress a pitch or raise it slightly by changing the embouchure; this sounds like a slight glissando, but should not be used between pitches greater than a 2nd.

EXAMPLE 6-14. Gershwin, *Rhapsody in Blue*, opening

CD-2/TR. 31



ADDITIONAL PASSAGE FOR STUDY

Crumb, *Echoes of Time and the River*, second movement, mm. 12–13

Slap Tonguing

Slap tonguing, a special effect taken from jazz, is most effective on clarinets and saxophones, but it is also possible on the flute. It produces a perky, snappy, overarticulated attack.

CD-2/TR. 32

EXAMPLE 6-15. Copland, *Music for the Theater*, 5–6

Subito allegro molto (♩ = 144)

Picc.
Solo
(slap tongue)
E♭ Cl.
Bsn.

Key Clicking

Key clicking has been used quite extensively in the last few decades. It can create simply a percussive, rhythmic effect; slapping down hard without any air blowing through the instrument can produce very faint pitches as well. The effect, particularly on the flute and when the listener is very close to the instrument, is much like that obtained by a string player who puts down his or her fingers hard on the strings without using the bow. Since the resulting sound is so soft, the composer or orchestrator should employ this technique only very discreetly in orchestral music.

CD-2/TR. 33

EXAMPLE 6-16. C. Polin, *The Death of Procris*, second movement, mm. 33–36

33
Fl.
clicks

The opposite technique is also sometimes used. The composer may ask the wind players to blow through the instrument without producing any pitches, which simply gives the sound of air blowing through a pipe.

Whistle Tones

Flutists are sometimes called on to produce whistle tones. These are produced by turning the instrument slightly away from the face and blowing across instead of into the mouthpiece while fingering the pitches. Doing so can cause a

shriek, such as those required by Sydney Hodkinson in *Interplay* and Donald Erb in his *Concerto for Solo Percussionist*.

With all these techniques, as with the special string effects covered in Chapter 2, it is better to write out one's intentions in the score and parts, since no universally standardized notation exists.[*]

THE WOODWIND SECTION OF A SYMPHONY ORCHESTRA

The instruments are listed here in the order in which they appear on the score page.

1. The classical orchestra,[†] up to and including early Beethoven:
   2 flutes
   2 oboes
   2 clarinets (the type of clarinet determined by the key of the work)
   2 bassoons
2. The nineteenth-century orchestra after Beethoven:
   piccolo
   2 flutes
   2 oboes
   English horn
   2 clarinets
   bass clarinet
   2 bassoons
   contrabassoon
3. The large orchestra of the late nineteenth and twentieth centuries:
   piccolo (sometimes two piccolos or one doubling on alto flute)
   3 flutes
   3 oboes
   English horn
   C, D, or E♭ clarinet
   2 or 3 clarinets in B♭ or A
   bass clarinet (some scores ask for two bass clarinets or basset horn)
   3 bassoons
   contrabassoon

When saxophones are used, they appear in the following sequence: soprano, alto, tenor, baritone, bass. They are placed between the clarinets and the bassoons on the score page.

---

[*] For the clearest notation of these effects, check Kurt Stone, *Music Notation in the Twentieth Century*.

[†] In some early Haydn symphonies (for instance, No. 22), the English horn was used; also, piccolo was used in some stage works before Beethoven. However, the usual Classical orchestra is what appears here.

SCORING FOR WOODWIND INSTRUMENTS

Scoring for winds is fairly straightforward, with no major pitfalls that the orchestrator need consider. He or she, however, should be familiar with the technical and aural limitations of each register on all woodwind instruments, as well as the ease with which certain instruments (or instrumentalists!) can play passages that are replete with runs and leaps. In addition, the orchestrator should be aware that breath control is different from instrument to instrument; the oboe player, for instance, needs less breath and is therefore able to play for longer stretches than any other wind player.

In order to create the most legible score, the following rules should be observed:

1. The first and second parts of identical instruments (two flutes, two oboes, etc.) are usually written on the same staff. An exception occurs when the difference in rhythm and general complexity of the two parts would make this practice confusing; in those cases, a separate staff should be used for the second player. When there are three parts for identical instruments, the first and second should be on one staff, the third on a separate staff. If the second and third parts are rhythmically and melodically more akin to each other than the first and second, the first should appear alone on one staff and the second and third combined on another.

EXAMPLE 6-17. Putting the First and Second Parts on One Staff



2. If both first and second players are to play in unison, the part must be marked *a* 2. In the case of three players in unison, the part should be marked *a* 3.

EXAMPLE 6-18. Bartók, *Concerto for Orchestra*, first movement, mm. 233–236 (not recorded)

Tempo I (♩. = 88)
233
Fl. 1, 2 — a 2 — *ff*
Ob. 1, 2, 3 — a 3 — *ff*
B♭ Cl. 1, 2, 3 — a 3 — *ff*
Bsn. 1, 2 — *ff* — a 2
Bsn. 3 — *ff*

3. If the first or second player is to play alone, one can either supply the appropriate rests in the score for the other player or mark the part 1., 1°, or 2., 2°.

EXAMPLE 6-19. Two Ways to Distinguish Parts on a Staff

2 Fl.

or

Fl. 1 Fl. 2

4. The term *divisi* should not be used in wind or brass parts, since it is a designation for string players only, who read two to a part. Each wind player is given a separate part. Certain woodwind passages are designated as *solo* to emphasize the fact that a particular line or melody is the most important event occurring in the orchestral texture at that moment. In Example 6-14, the clarinet "solo" is the only thing audible at the beginning of the work.

7

Individual Woodwinds

Each woodwind instrument has a distinctive sound, which makes it invaluable as a presenter of melodic material. In this role, each instrument exhibits a certain personality that, along with every segment of its range, has been typecast by many composers. Thus, parts that are assigned to a woodwind instrument appear idiomatic to that instrument, and psychologically as well as musically could not be performed on any other instrument. As any good orchestrator must do, we will keep in mind each instrument's unique personality as we examine each woodwind in turn.

It is important also to concentrate on the role each instrument plays in an orchestral context. When we describe a certain register as weak, it does not mean that this register would be inappropriate for a solo passage or as part of a lighter texture, such as that of a woodwind quintet. Rather, we designate sections of an instrument's range as weak to caution composers or orchestrators not to cover the instrument with a lush orchestration, since it is physically impossible for the player to extract more volume out of the instrument in that register. Similarly, some extremely high registers are shrill, and in most cases the performer can only play them extremely loudly. Too often inexperienced orchestrators who ignore registral peculiarities of woodwind instruments blame the players if the results do not coincide with their intentions. To arm the reader we will examine the range and registral characteristics of every major orchestral woodwind instrument in this and the following chapter.

CD-ROM
CD-3
FLUTE

Flute

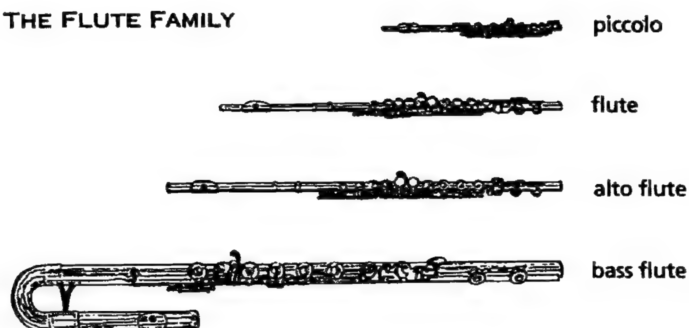
Flauto (It.); Flûte (Fr.); Flöte (Ger.)

The flute is the only nonreed instrument in the woodwind choir, and though all the other woodwind instruments exhibit great agility and sensitivity, none can equal the flute in these attributes.



Bonita Boyd, Flute

THE FLUTE FAMILY

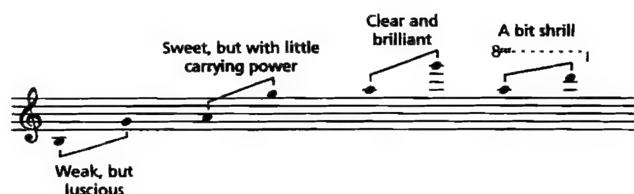


Range and Registral Characteristics

EXAMPLE 7-1. Range



EXAMPLE 7-2. Registral Characteristics



Most professional flutes made in America have a B foot, meaning that they are able to play low $B\natural^3$.* In the uppermost register, the modern flute goes beyond high C^7 to $C\sharp^7$ and D^7. All pitches are difficult to produce above A^6, and the player must approach them with extreme caution—preferably through an ascending scale. In general, the highest fourth and the lowest fourth, with all intervening chromatic pitches, are most problematic, especially for the nonprofessional.

Here are two examples of the flute's beautiful lower registers. In each passage the composer is careful to accompany the flute with a very sparse orchestral texture so that the flute can be heard. For instance, in Example 7-3, the strings begin with a sustained harmonic background, accelerating the harmonic rhythm only in measure 4 (we advise the reader to compare these passages against the full score). The Brahms example, which features strings and two horns playing a soft homophonic accompaniment, affords a wonderful opportunity to observe the profound changes in register of the flute.

*Some flutists argue that a B foot makes it easier to play C^4, and that the B foot gives a slightly greater resonance or depth to the flute. European flutists have felt that the B foot takes away some brilliance.

CD-2/TR. 34
INDEX 1 / 0:00

EXAMPLE 7-3. Dvořák, Symphony No. 9 ("From the New World"), first movement, mm. 149–156



CD-2/TR. 34
INDEX 2 / 0:15

EXAMPLE 7-4. Brahms, Symphony No. 4, fourth movement, mm. 97–104



ADDITIONAL PASSAGE FOR STUDY

Debussy, *Ibéria*, first movement, 4 mm. before [33]; second movement, mm. 5–9 after [46]

Here are two examples in which the flute's tones are the purest. In the Tchaikovsky excerpt (Example 7-5), the pizzicato string accompaniment is played *pianissimo*, with mutes (con sordino). Again, the composers are careful not to interfere with the flute's melody line in these passages by scoring the rest of the orchestra too heavily—in fact, in Example 7-6 Debussy scores this passage as a flute solo.

CD-2/TR. 35
INDEX 1 / 0:00

EXAMPLE 7-5. Tchaikovsky, Piano Concerto No. 1, second movement, mm. 5–12



CD-2/TR. 35
INDEX 2 / 0:33

EXAMPLE 7-6. Debussy, *Prélude à "L'après-midi d'un faune,"* mm. 21–24 (solo flute)



The upper range of the flute possesses commanding brilliance; the first of the next two examples also shows the flute's agility. All separately notated pitches are tongued, and slurred ones are played *legato* (on one breath).

EXAMPLE 7-7. Rossini, *William Tell*, Overture, mm. 209–224

CD-2/TR. 36

Slowly

Fl.

E.H.

dolce

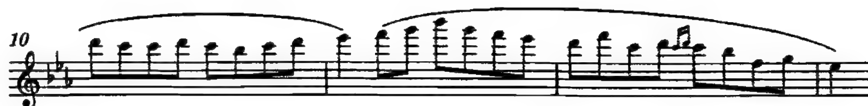
EXAMPLE 7-8. Bizet, *Carmen*, Prelude to Act III, mm. 1–13

CD-2/TR. 37

Andantino quasi allegretto

Fl.

pp



ADDITIONAL PASSAGES FOR STUDY

Beethoven, *Leonore* Overture No. 3, mm. 328–352
Hindemith, *Symphonic Metamorphoses*, third movement, mm. 31–48

The flute can effectively create slower, more intense long-note melodies. It is important to remember that the flute requires a great deal of breath; therefore, it is important to give the flutist time to breathe after especially difficult or sustained passages. To avoid problems sustaining the long notes in measures 2, 4, and 6, Brahms has the second flute hold the note while executing the crescendo-diminuendo so that the first flute can breathe without diminishing the intensity of the passage (Example 7-9). Here, the two parts must be dovetailed carefully to create the illusion of a single flute performing the passage.

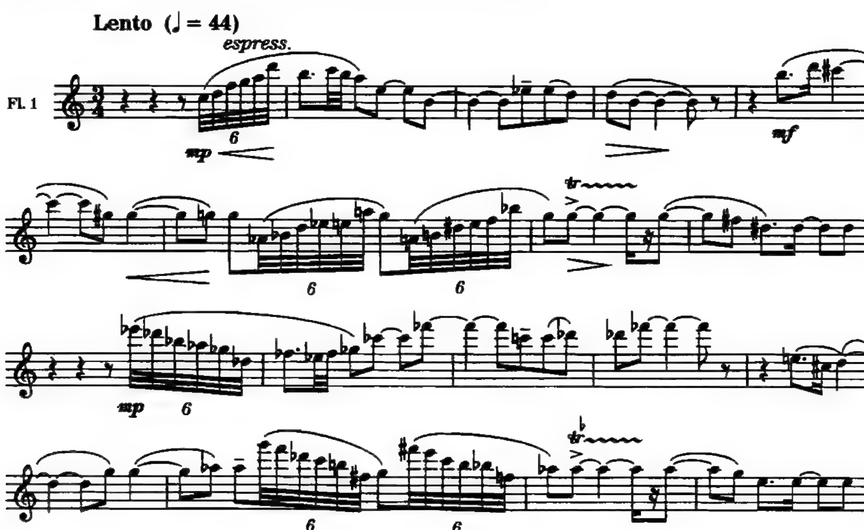
CD-2/TR. 38

EXAMPLE 7-9. Brahms, Symphony No. 1, fourth movement, mm. 38–46



CD-2/TR. 39

EXAMPLE 7-10. Piston, *The Incredible Flutist*, at [E]



ADDITIONAL PASSAGE FOR STUDY

Shostakovich, Symphony No. 5, first movement, 1 m. after [39] to [41]

Articulation and Tonguing

The following passages may be played using either double tonguing or triple tonguing. (See Chapter 6, pp. 172 for a discussion of double and triple tonguing.)

EXAMPLE 7-11. Mendelssohn, Symphony No. 4, fourth movement, mm. 6–19 (triple tonguing)

CD-2/TR. 40
INDEX 1 / 0:00

6 Presto
2 Fl.
p leggiero

EXAMPLE 7-12. Rimsky-Korsakov, *Capriccio espagnol*, mm. 6–11 (double tonguing)

CD-2/TR. 40
INDEX 2 / 0:26

Allegro
2 Fl.
a 2

ADDITIONAL PASSAGES FOR STUDY

Debussy, *La Mer*, second movement, [24]–[28] (triple tonguing)
Mozart, *Le Nozze di Figaro*, Overture, mm. 276–282 (double tonguing)
R. Strauss, *Don Juan*, mm. 179–183 (triple tonguing)

Trills and Tremolos

Trills and tremolos are very common in flute music. The following, however, are difficult, if not impossible to play, and should be avoided:

EXAMPLE 7-13. Trills and Tremolos to Be Avoided

a. TRILLS

and

b. TREMOLO

Some observations: Some flutes have an added $C\sharp^4$ trill key to facilitate the execution of low trills. In general, all trills above high G^6 are difficult to play. All tremolos from and to low $B\natural^3$ are weak and should not be used. And for best results, tremolos in the lowest octave that have an interval of more than a perfect 5th should not be written; in the higher registers, tremolos of a perfect 4th can be safely played.

Harmonics

Although all the pitches above the open $C\sharp^5$ on the flute are overblown harmonics, some of these notes have their own distinctive fingerings—especially in the highest register. In order to get a special pale or white sound, a composer may ask the flutist to play only actual harmonics. The notation sign for these notes is the same as for strings: a small circle above the note. The pitch of a harmonic will sound exactly as notated; the player fingers the pitch an octave (or in some cases another partial) below the notated pitch and then overblows to sound the desired note.

CD-2/TR. 41
INDEX 1 / 0:00

EXAMPLE 7-14. Ravel, *Daphnis et Chloé*, Suite No. 1, "Nocturne," mm. 5–11

Moderato (♩ = 72)

Fl.

mf

CD-2/TR. 41
INDEX 2 / 0:39

EXAMPLE 7-15. Ravel, *Daphnis et Chloé* ballet, at [49]

Modéré

Fl. 1
Fl. 2

Alt. Fl.

p *ff* *pp*

ADDITIONAL PASSAGE FOR STUDY

Stravinsky, *Le Sacre du printemps*, Part II, Introduction, mm. 38–51

Coloristic Effects

In Chapter 6 we described flutter tongue, multiphonics, microtones, key clicks, and other coloristic effects. These techniques, which have proliferated in the latter half of the twentieth century, are all readily executed on the flute. Here are examples of two particular techniques: flutter tonguing and multiphonics.

EXAMPLE 7-16. R. Strauss, *Salome*, Scene 2, at [41]

CD-2/TR. 42

EXAMPLE 7-17. C. Polin, *The Death of Procris*, instructions for multiphonics

ADDITIONAL PASSAGES FOR STUDY

Berio, *Sequenza for Flute* (multiphonics, key clicks with tremolo, key clicks without sound, key pops)

A. Gilbert, *The Incredible Flute Music* (multiphonics, quarter tones, and key clicks)

B. Jolas, *Fusain* (an excellent quarter-tone guide precedes the score; multiphonics)

T. Musgrave, *Narcissus* (flute and digital delay; also available for clarinet and digital delay)

H. Sollberger, *Riding the Wind* (buzz tones, whistle tones, key clicks, multiphonics)

Multiple Flutes

During the Classical period, composers often altered the number of flutes they employed in each work. Haydn usually used two, but felt the need for three in his *Creation*. Mozart sometimes used only one, as did Schubert in his Fifth Symphony. After Beethoven, a pair of flutes in an orchestral work was the rule. Sometimes the second flute doubled on piccolo (in Rossini especially); in other situations two independent flutes plus a piccolo were used. Three flutes became

the standard complement of most orchestras only in the middle of the nineteenth century, and a fourth and even a fifth member of the flute section, playing two piccolos or a piccolo and an alto flute, have been used.

These multiple flutes either (1) double each other at the octave or the unison; (2) are scored in parallel intervals; (3) play antiphonally one with the other; (4) relieve one another in long, fast, or sustained passages; or (5) have completely independent parts. Some examples of multiple flute passages are the following:

CD-2/TR. 43
INDEX 1 / 0:00

EXAMPLE 7-18. Tchaikovsky, *Nutcracker* Suite, "Dance of the Toy Flutes," mm. 3–6 (parallel flute parts)

CD-2/TR. 43
INDEX 2 / 0:13

EXAMPLE 7-19. Ravel, *Daphnis et Chloé* ballet, at 165 (independent and parallel flute parts)

ADDITIONAL PASSAGES FOR STUDY

J. S. Bach, Cantata No. 106, Sonatina (2 flutes)
Chabrier, *España*, mm. 78–82 (2 flutes)
Debussy, *Nocturnes*, "Fêtes," mm. 48–50 (3 flutes)
Mendelssohn, *A Midsummer Night's Dream*, Scherzo, mm. 1–8 (2 flutes)
Stravinsky, *Fireworks*, mm. 1–12 (2 flutes, piccolo)
Stravinsky, *Petrushka*, Third Tableau, "The Moor's Room," m. 5 after [62] to [63] (2 flutes)

Scorings for flute, piccolo, and alto flute that double other instruments and use coupling will be discussed in Chapter 8.

PICCOLO

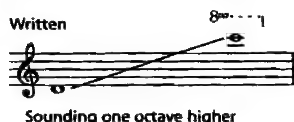
CD-ROM
CD-2
PICCOLO

Ottavino, Flauto piccolo (It.); Petite flûte (Fr.); Kleine Flöte (Ger.)

Each of the four main woodwind instruments—flute, oboe, clarinet, and bassoon—has at least one auxiliary instrument that extends its range and, in many cases, provides intensified coloristic effects at one or both ends of the registral spectrum. In the modern orchestra, these instruments in many cases have become full-fledged extensions of the principal woodwinds and are used as a matter of course.

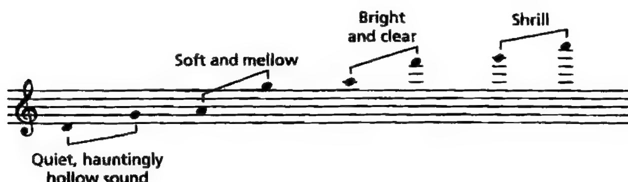
The instrument that extends the flute range one octave up is the piccolo. In so doing it extends the range of the entire orchestra, and for this reason has become especially popular in twentieth-century scores. It works on the same principle as the flute, with the same versatility and agility.

EXAMPLE 7-20. Range



The piccolo is a C instrument whose lowest note is D; there are no models that can play any pitches below that note.*

EXAMPLE 7-21. Registral Characteristics



*Some military bands still use the outmoded D♭ piccolo, but this instrument has become exceedingly rare.

Like the flute, the piccolo can be used effectively in its lowest octave only if not much else is going on in the orchestra to drown out its haunting, hollow, very soft sound in this register.

Above D^5, the piccolo is very commanding, as can be seen in the following examples:

CD-2/TR. 44

EXAMPLE 7-22. Mozart, *Die Zauberflöte*, Act II, "Alles fühlt der Liebe Freuden," mm. 5–9

CD-2/TR. 45

EXAMPLE 7-23. Prokofiev, *Lieutenant Kijé*, first movement, mm. 9–17

CD-2/TR. 46

EXAMPLE 7-24. Gluck, *Iphigénie en Tauride*, Act I, Scene 3, mm. 1–8

ADDITIONAL PASSAGES FOR STUDY

Debussy, *Ibéria*, [33], mm. 1–6
Kodály, *Háry János* Suite, second movement, mm. 5–15

Prokofiev, *Scythian Suite*, third movement, mm. 2–6, 4 mm. after [51] to end
Shostakovich, Symphony No. 6, second movement, [51] to [53]
Shostakovich, Symphony No. 15, end of first movement
Smetana, *The Bartered Bride*, Overture, mm. 427–448
Stravinsky, *Petrushka*, First Tableau, "The Shrovetide Fair," mm. 9–4 before [17]
Stravinsky, *Petrushka*, First Tableau, "Russian Dance," mm. 11–17 after [42]
(2 piccolos and 3 flutes)

In its upper register the piccolo sounds very piercing and resembles a whistle. Although many composers have used this sound to good advantage, it is important not to overuse the instrument in its extreme upper register, for the sound becomes very tiresome to listen to and very exhausting to play.

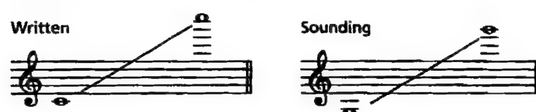
ALTO FLUTE

Flauto contralto (IT.); *Flûte en sol* (FR.); *Altflöte* (GER.)

CD-ROM
CD-2
ALTO FLUTE

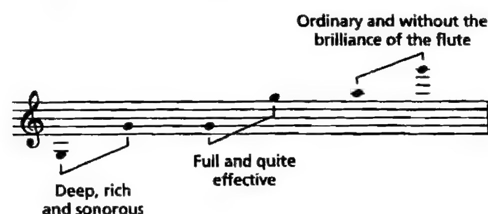
The alto flute, the first extension of the flute family downward, came into prominence in the last decade of the nineteenth century and was made popular by the scores of Stravinsky and Ravel in particular. In many orchestration texts, as well as some scores, the alto flute is called the "bass flute," but that is an erroneous designation. By now it has become an accepted member of the symphony orchestra, although few scores ask for it. Its tube is quite a bit thicker and longer than that of the regular flute, and its body is either straight, like the flute's, or bent 180 degrees, like the bass flute's.

EXAMPLE 7-25. Range



The alto flute is a transposing instrument; its mechanism and fingering are the same as on the C flute, but the alto flute is in G and therefore sounds a perfect 4th lower than written.

EXAMPLE 7-26. Registral Characteristics



Even though all flute techniques can be executed on the alto flute, they require more breath because of this instrument's larger size and the greater diameter of its tube. Its low notes are much richer and have more carrying power, but the upper register is quite ordinary and without much brilliance. If one elects to use an alto flute, one should certainly exploit its lower register, for the regular

flute and the piccolo are capable of covering the upper part of the register as adequately.

Here are some examples in which the alto flute is used to its best advantage, as a solo instrument or in combination with other flutes.

CD-2/TR. 47
INDEX 1 / 0:00

EXAMPLE 7-27. Holst, *The Planets*, "Saturn," mm. 53–62

Andante
53
Alt. Fl.
pp
58

CD-2/TR. 47
INDEX 2 / 0:29

EXAMPLE 7-28. Stravinsky, *Le Sacre du printemps*, Part I, "Rondes printanières," at [56]

Tranquillo (♩ = 108)
Fl. 1
Fl. 2
Alt. Fl.
p
sff
Solo

Fl. 1
Fl. 2
Alt. Fl.

ADDITIONAL PASSAGES FOR STUDY

S. Albert, *In Concordiam* (throughout)
Ravel, *Daphnis et Chloé*, Suite No. 1, 5 mm. after [2] (piccolo, two flutes, alto flute), and Suites No. 1 and 2 (alto flute throughout)
Sessions, *The Black Maskers* (throughout)
Varèse, *Amériques*, beginning (solo alto flute)

BASS FLUTE

Flauto basso (It.); Flûte bass (Fr.); Bassflöte (Ger.)

Ever since the middle of the nineteenth century, flutists and flute builders have acknowledged the need for a bass instrument in the family. Theobald Boehm was the first to try constructing one, but the result was too unwieldy. It was not until 1930 that a completely practical instrument was built by the flute makers Rudall, Carte and Company based on the Boehm mechanical system. The upper part of the instrument is bent 180 degrees below the head joint, so that the main tube crosses the right side of the player's body. An adjustable light metal bracket allows the player to balance the instrument on the right thigh when sitting down, which makes for a very comfortable playing position.

EXAMPLE 7-29. Range



This transposing instrument sounds an octave lower than written.

The bass flute is no more difficult to play than the alto flute, but because of its novelty and high cost few orchestras have one and few composers score for it. It can be found, however, in solo and chamber music and in some film and band scores. It is most effective in its rich low register, where its unique warm, hollow sound is unmatched.

Here is an example of a bass flute passage:

EXAMPLE 7-30. Zandonai, *Francesca da Rimini*, mm. 186–190

CD-2/TR. 48

Slowly
186
rall.
a tempo
Bs. Fl.
Sounds

ADDITIONAL PASSAGE FOR STUDY

P. Chihara, *Willow, Willow* (bass flute throughout)

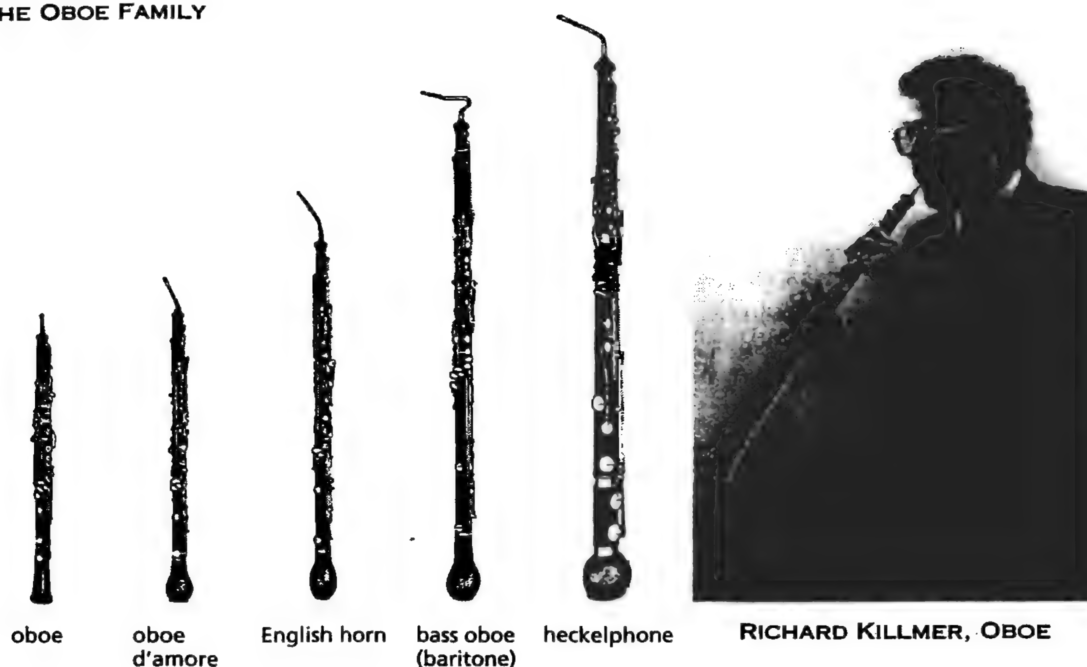
OBOE

CD-ROM
CD-2
OBOE

Hautbois (Fr.); Oboe or Hoboe (Ger.)

The oboe, basically a lyrical instrument, has possibly the most individual personality of all the woodwinds. Many people have described this double-reed instrument as the *prima donna* of the woodwind choir. This is not due to its

THE OBOE FAMILY



RICHARD KILLMER, OBOE

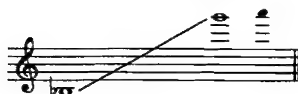
position in the section but rather because it is such a temperamental instrument to play.

The most volatile part of the oboe is its reed, which is inserted at the top of the pipe. All professional oboe players make their own reeds, which must be exactly right if the player is to perform successfully. The reed must be thin enough to vibrate easily but not so thin as to impede the player's ability to control the tone quality and pitch. It must always be moist; it is affected by temperature changes and atmospheric conditions.

Professional oboists develop an extraordinary ability to sustain notes for a long time or to play quite lengthy passages in one breath (letting the air out very slowly until the next breathing point). However, because of the sensitivity of the reed, the instrument requires great control of the embouchure. The breath and embouchure control required make frequent rest periods mandatory.

Range and Registral Characteristics

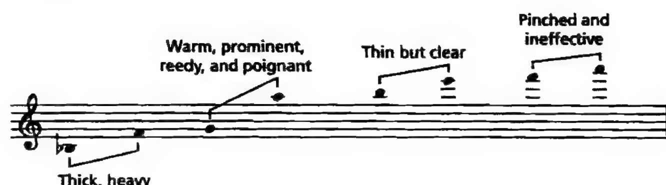
EXAMPLE 7-31. Range



The most effective range on the oboe is from F^4 to C^6; for a thin, softly piercing effect, the oboe is most beautifully scored in the range between this high C and

the F above it. These notes, however, are quite hard to control, especially for nonprofessional oboists.*

EXAMPLE 7-32. Registral Characteristics

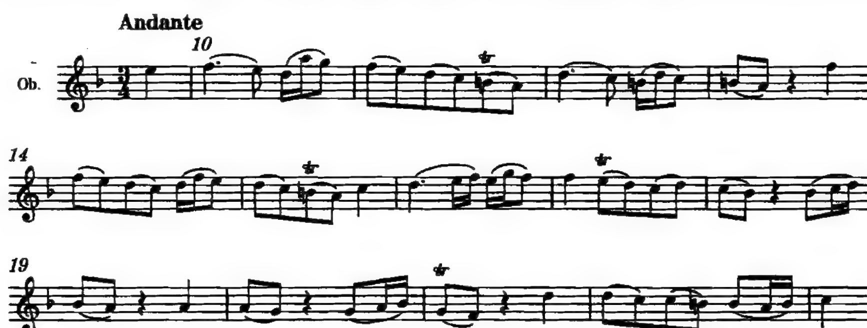


In terms of registral characteristics, one can strike a contrast with the flute. Whereas the flute gets more brilliant as it goes up in register, the oboe loses its pungency. Conversely, the flute is weak in its lowest octave, but the oboe has a thick, full sound and tends to honk in the lowest 5th of its range. One should never write a *pianissimo* for the oboe in this register, even for the best players.

Representative Passages from the Literature

Here are some examples from the orchestral repertoire showcasing the oboe's bountiful solo opportunities, which it has enjoyed since the Baroque period:

EXAMPLE 7-33. Bach, *Brandenburg* Concerto No. 2, second movement, mm. 9–23 CD-2/TR. 49



EXAMPLE 7-34. Tchaikovsky, Symphony No. 4, second movement, beginning CD-2/TR. 50



*The high A^6 shown in Example 7-31, which is the top pitch available on the oboe, is extremely difficult to produce; even many professional oboists will not play it. However, some twentieth-century composers have asked for this pitch: Milton Babbitt, in *Relata II*, and the German composer Manfred Trojahn, in his *Divertissement* for oboe and orchestra, which uses the upper range of the instrument almost exclusively in the first movement, with many trills on high G and G♯. Today, certain oboe players specialize in producing these very high pitches.



CD-2/TR. 51

EXAMPLE 7-35. Shostakovich, Symphony No. 1, third movement, at [4]



ADDITIONAL PASSAGES FOR STUDY

Babbitt, *Relata II* (extends oboe range to high A)
Bartók, *Concerto for Orchestra*, fourth movement, mm. 4–12
Beethoven, Symphony No. 3, second movement, mm. 8–12
Beethoven, Symphony No. 6, third movement, mm. 91–98
Bizet, Symphony in C, second movement, mm. 8–19
Rossini, *La Scala di seta*, Overture, mm. 37–53
Schubert, Symphony No. 8 ("Unfinished"), second movement, mm. 207–221
Schubert, Symphony No. 9, second movement, mm. 8–24
Schumann, Symphony No. 2, third movement, mm. 8–19

Articulation and Tonguing

Because of the thin, flexible oboe reed, it is possible to single tongue staccato passages very quickly; but double and triple tonguing are seldom, if ever, called for. Extremely fast, repeated notes are not idiomatic, even though some composers have required them; notice that in Example 6-10 (p. 173) Mendelssohn writes the rapid 𝄋 repeated figure for all the winds except oboes. That the oboe does not easily speak rapid repeated notes does not imply that the instrument is not agile. On the contrary, in the hands of a good performer it can be made to play almost any run and fairly large skips.

CD-2/TR. 52

EXAMPLE 7-36. Mozart, *Sinfonia concertante*, K. 297, third movement, mm. 192–200



EXAMPLE 7-37. Oboe Passage with Skips

CD-2/TR. 53



Trills and Tremolos

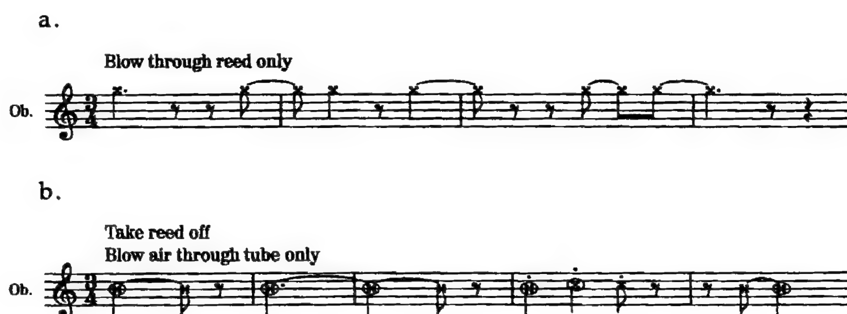
A list of trill and tremolo do's and don't's for the oboe would depend very much on the model of the instrument and the proficiency of the player. On newer instruments trills and tremolos are possible almost anywhere except between the bottom B♭³ to B♮³. Half-step trills from C⁴ to C♯⁴ are also not advisable. In addition, all large-interval tremolos above the staff are quite difficult, as are tremolos of more than a perfect 5th anywhere on the instrument.

Coloristic Effects

In some contemporary scores, the oboist is required to execute key clicks and to blow air through the tube without producing a pitch. In other instances a composer asks the performer to remove the reed from the instrument and blow through it (Example 7-38a). Alternatively, if one simply wants to simulate an airflow without pitch, one asks the performer to remove the reed and blow through the pipe (Example 7-38b).

EXAMPLE 7-38. "Nonpitched" Passages for Oboe

CD-2/TR. 54



Bending the pitch up or down a quarter tone is also a common special technique. This effect can be accomplished by changing the embouchure or pulling the reed out of the mouth slightly.

EXAMPLE 7-39. Quarter Tones on Oboe

CD-2/TR. 55



Even though multiphonics are quite successful on the oboe, they often sound strident. In addition, not all oboists are able to produce them. A composer

should consult with a performer about the best available multiphonic and its fingering before writing it into a score. The fingering should always accompany the multiphonic.

(See also Example 8-43, pp. 288, and 8-45, pp. 290.)

Multiple Oboes

The standard complement of oboes in a symphony orchestra is usually two, plus an English horn. Sometimes this complement is enlarged to three oboes or more, plus an English horn. In the early Classical orchestra, two oboes were almost always present and most often had the tasks of sustaining tonic and dominant pedal notes (frequently in octaves with two French horns), and playing melodic passages. Later on, they were used in many different ways, some of which are shown in the following passages:

CD-2/TR. 56

EXAMPLE 7-40. Berlioz, *Symphonie fantastique*, fifth movement, mm. 460–467

CD-2/TR. 57

EXAMPLE 7-41. Kodály, *Háry János* Suite, second movement, mm. 47–51

CD-2/TR. 58

EXAMPLE 7-42. Bartók, *Concerto for Orchestra*, fifth movement, mm. 249–254

When the oboe is used as a doubling instrument, its nasal quality adds articulation and a biting edge to passages. In this capacity, the oboe should be reserved for a significant melodic line so that the instrument that is doubled will not be overshadowed by the oboe. This aspect will be discussed more fully in the next chapter.

ADDITIONAL PASSAGES FOR STUDY

Stravinsky, *Petrushka*, First Tableau, "Russian Dance," [37]–[39] (three oboes and English horn), and Fourth Tableau, "Dance of the Nursemaids," m. 9 after [90]–[95] and at [96]

ENGLISH HORN

Corno Inglese (IT.); *Cor anglais* (FR.); *Englisches Horn* (GER.)

CD-ROM
CD-2
ENGLISH HORN

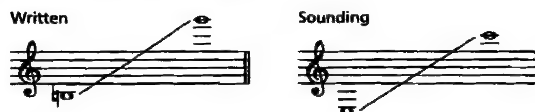
There are no standard instruments in the oboe family that extend the range upward, but at least three extend the range downward. The English horn, the alto instrument of the family, is the most popular and works on the same principle as the oboe. It is an instrument with a conical tube and double reed, with both the tube and the reed slightly longer than those of the oboe. Added to the flared part of the oboe tube is a bulb-shaped bell (*d'amore* bell), which gives the English horn a more sonorous, melancholy sound, rather like a quail.

There is a great deal of conjecture about the name English horn. The instrument is not English, nor does it resemble the horns in the brass family. The most plausible—though partial—explanation for its name is that its original French designation was "*cor anglé*" because of the bent shape of some of the older instruments. The French word *anglé* was then mistranslated as *anglais*, or English. The false translation has prevailed—even though the modern instrument is not bent—and it is universally known by the name English horn.

Although the English horn (or, more exactly, the *oboe da caccia* [see p. 203]) was often used in the Baroque era, it was rather neglected from the time of Haydn to that of Wagner, especially in Germany. Notable exceptions may be found in the works of Berlioz and Meyerbeer. From the middle of the nineteenth century on, the English horn enjoyed a lofty position in the orchestral repertoire.

Range and Registral Characteristics

EXAMPLE 7-43. Range



The English horn is a transposing instrument that sounds a perfect 5th lower than written.

EXAMPLE 7-44. Registral Characteristics



The registral properties of the English horn are much like those of the oboe: the sound gets thinner as it gets higher. In its upper register, the English horn sounds so much like the oboe that it loses its personality. However, its lowest 5th or 6th is beautifully rich and expressive, with tremendous carrying power.

Representative Passages from the Literature

Countless examples in the orchestral repertoire feature English horn solos both *a cappella* and accompanied. Here are some outstanding ones:

CD-2/TR. 59

EXAMPLE 7-45. Berlioz, *Roman Carnival* Overture, mm. 21–37

21 Andante
Eng. Hn. solo
mf espressivo
26
31
cresc.
35
sf

CD-2/TR. 60

EXAMPLE 7-46. Wagner, *Tristan und Isolde*, Act III, Scene 1, mm. 5–11

5
Eng. Hn. solo
p *cresc.* *f* *dim.* *p* *f* *dim.*

CD-2/TR. 61

EXAMPLE 7-47. Sibelius, *The Swan of Tuonela*, mm. 18–32

Andante molto sostenuto
18
Eng. Hn. solo
ff *dim.*
23
mf *f* *dim.*
27
mf *p* *dim.*

ADDITIONAL PASSAGES FOR STUDY

Berlioz, *Symphonie fantastique*, opening of the third movement (duet between oboe and English horn)
Copland, *Quiet City*, mm. 22–27
Debussy, *Nocturnes*, "Nuages," mm. 5–8
Dvořák, Symphony No. 9 ("From the New World"), second movement, mm. 7–18
Franck, Symphony in D minor, second movement, mm. 16–32
Rossini, *William Tell*, Overture, mm. 176–180
Stravinsky, *Le Sacre du printemps*, Part I, "L'Adoration de la terre," mm. 14–20
Tchaikovsky, *Romeo and Juliet*, mm. 183–189

Trills and Tremolos

The same trill and tremolo constraints that concern the oboe also apply to the English horn; tremolos should be confined to small intervals, especially when they occur above the staff.

Coloristic Effects

The English horn is as agile as the oboe and can easily execute all virtuosic figures with the rest of the woodwinds, including many recently invented coloristic effects. The great virtuoso Heinz Holliger has written and commissioned many works that make use of multiphonics and microtonal sounds, mainly for solo literature.

OTHER MEMBERS OF THE OBOE FAMILY

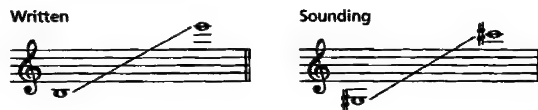
Four other members of the oboe family deserve mention. Although they are not used very frequently, the composer or orchestrator should have some superficial knowledge of their sound and notation.

Oboe d'amore

Hautbois d'amour (FR.)

The oboe d'amore is the mezzo-soprano instrument of the oboe family. This instrument was very popular in the Baroque period, but as a larger sound was needed for the larger orchestras and halls, it fell out of favor and was supplanted by both the oboe and English horn. Although it is resurfacing in some twentieth-century composers' works, it is still not widely used in an orchestral setting.

EXAMPLE 7-48. Range



The oboe d'amore is a transposing instrument, and sounds a minor 3rd lower than written. Occasionally, Bach and other Baroque composers notated the actual sounding pitches of the instrument (for instance, in Bach's *Christmas Oratorio*). Today's composer or orchestrator notates the pitches that are played.

The sound of the oboe d'amore is much gentler than that of the oboe, but since it has a bulblike bell like the English horn, its lower notes are full, dark, and beautiful. The upper register is quite thin and almost useless, although in his *Sinfonia domestica* Strauss calls for an F^6. Gunther Schuller writes consistently above the staff for it, but he doubles its part with other instruments in his Concerto No. 2 for Orchestra.

Here are some examples of the oboe d'amore as a solo instrument, as well as within an orchestral framework:

CD-2/TR. 62

EXAMPLE 7-49. Bach, *Christmas Oratorio*, Sinfonia, mm. 9–11 (flutes, strings, and continuo not recorded)

Andante
9
Fl. 1
Fl. 2
Ob. d'amore 1
Ob. d'amore 2
Ob. da caccia 1
Ob. da caccia 2
Vln. 1
Vln. 2
Vla.
Cont.

CD-2/TR. 63

EXAMPLE 7-50. R. Strauss, *Sinfonia domestica*, mm. 156–164 (violins not recorded) and mm. 209–215

156
sehr zart
Ob. d'amore
Vln. 2
Pult 1–3

Munter
209
Ob. d'amore

ADDITIONAL PASSAGES FOR STUDY

Bach, Cantata No. 37 ("Gottes Zeit"), "Der Glaube schlafft der Seele Flügel," mm. 1–6
Debussy, *Images*, "Gigues," [10] to [11]
Mahler, *Sieben Lieder aus letzten Zeit*, "Mitternacht"
Ravel, *Bolero*, mm. 77–84
G. Schuller, Concerto for Orchestra No. 2, second movement, mm. 76–77
R. Strauss, *Der Rosenkavalier* (throughout)

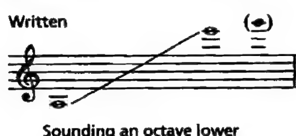
Oboe da caccia

The direct antecedent of the English horn was the *oboe da caccia* ("hunting oboe"), which was widely used throughout the Baroque period. It, too, was a transposing instrument, sounding a perfect 5th lower than written. Bach often notated this instrument at pitch in the alto clef (see Example 7-49), whereas the more antiquated French notation used the mezzo-soprano clef. Music for this practically obsolete instrument, if used today, should be notated as for the English horn, since it has the same range and registral characteristics as that instrument. With medieval and Renaissance music growing in popularity, the *oboe da caccia*, as well as the shawm (which came in at least seven sizes in the sixteenth century), is enjoying a renaissance.

Heckelphone

The heckelphone is named after its inventor, Wilhelm Heckel, an instrument maker in Biebrich, Germany. He perfected this pseudo-bass oboe around 1904. It sounds an octave lower than the regular oboe and adds a semitone, A^2, to the lowest part of its range.

EXAMPLE 7-51. Range



The Baritone or Bass Oboe

The *baritone oboe*, sometimes called the *bass oboe*, has the same range and transposition as the heckelphone and a very similar sound; the difference is in appearance. The heckelphone was made by a bassoon maker; hence, the instrument resembles a bassoon, whereas the baritone oboe was manufactured by an oboe maker and looks very much like a big English horn, since it also has a *d'amore* bell.

The heckelphone and the baritone oboe provide an excellent bass for the oboe family, but as in the case of the bass flute, very few instruments are extant, and very few orchestras would be able to supply one if it was called for in a score. Frederick Delius and Richard Strauss (in his operas *Elektra* and *Salome*) are two of the rare composers who have used the heckelphone. All parts may be performed equally well on the bass oboe.

CD-2/TR. 64

EXAMPLE 7-52. Delius, *Dance Rhapsody*, mm. 1–10 (English horn, cello, and double bass not recorded)

CD-2/TR. 65

EXAMPLE 7-53. R. Strauss, *Salome*, at 326

ADDITIONAL PASSAGE FOR STUDY

Chávez, *Sinfonía de Antígona* (throughout)

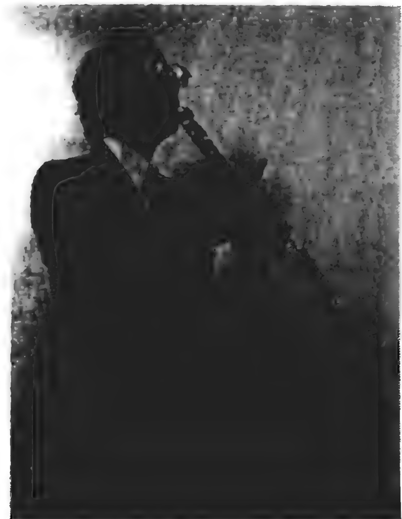
CLARINET

Clarinetto (It.); Clarinette (Fr.); Klarinette (Ger.)

CD-ROM
CD-2
CLARINET

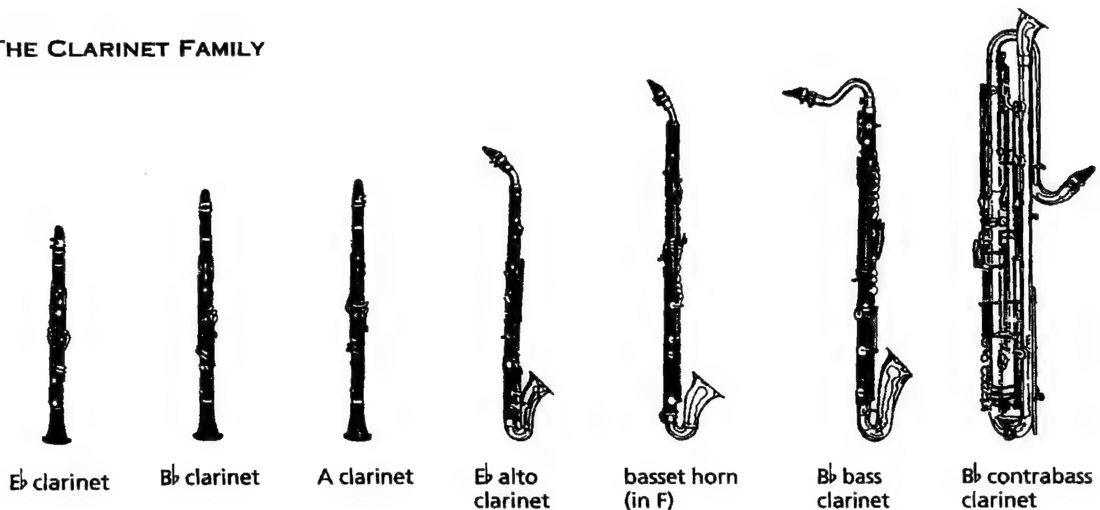
The clarinet consists of a cylindrical tube with an added bell, which flares slightly more than that of the oboe. A mouthpiece with a single reed is the uppermost joint of the five sections that make up the instrument. This mouthpiece is sometimes referred to as the *beak*.

Since all clarinets have the same fingering system, clarinetists are able to play all instruments in the family, regardless of their size or transposition. The modern clarinet's size dictates its particular tuning or transposition: B♭, E♭, or A*; if a B♭ clarinet plays a melody written in the key of C, the melody will sound in B♭. If this melody is played on an A clarinet, it will sound in A; the E♭ clarinet will sound in that key. The composer or orchestrator needs to be well acquainted with each instrument's transposition; you may wish to review pp. 167–170 as you read the following sections on the different clarinets.



CHARLES NEIDICH, CLARINET

THE CLARINET FAMILY

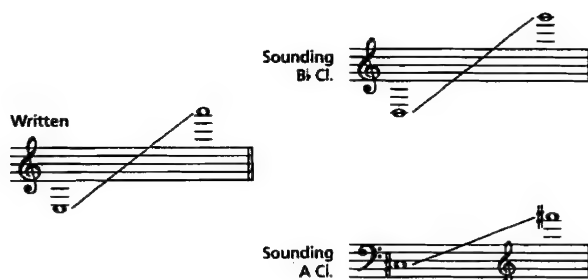


*The C clarinet is rarely used today.

Range and Registral Characteristics

All clarinets have the same written range.

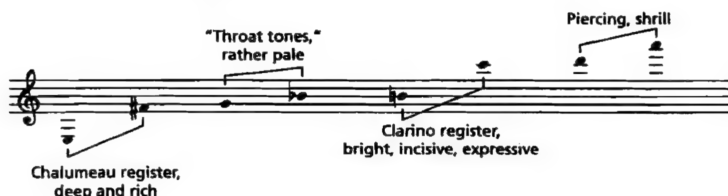
EXAMPLE 7-54. Range



The lowest written note on all clarinets (with the exception of specially constructed bass clarinets) is E^3: . The sound produced when that pitch is played depends, of course, on the particular instrument being used. (Please refer back to the transposition chart on p. 169.)

One peculiarity in fingering exists on all clarinets: it is called "the break" and occurs between $B\flat^4$ and $B\natural^4$. The B♭ is played with no keys depressed or holes covered (the entire tube is open), but the B♮ is played with all holes covered (the entire tube is closed)—except the vent hole, which is opened by the left thumb depressing the register key on the back of the instrument. The finger transition between these two notes presents problems for all but the most expert players. Although the same phenomenon occurs in the other wind instruments, the effect is less pronounced because they all overblow at the octave whereas the clarinet overblows at the 12th. As the performer becomes more experienced, the problem with coordinating the break disappears.

EXAMPLE 7-55. Registral Characteristics



The clarinet has the most homogeneous range of any of the woodwinds, no matter what part of its register it plays in. A good clarinetist can play the entire dynamic spectrum, from the faintest *pianissimo* to the most forceful *fortissimo*, beginning with the lowest and extending to the highest range of the instrument.

Some of the clarinet's registers are designated with names that recall the ancestry of the clarinet family. The lowest register is called the *chalumeau* register after the medieval instrument, a single-reed cylindrical pipe construction antedating the modern clarinet. The third and widest register is called the *clarino* register, after the Italian term for the Baroque trumpet that played the high

parts. The word *clarinet* is a diminutive form of clarino; when the clarinet first entered the symphony orchestra in the eighteenth century it was called *clarinetta* (little trumpet), since the parts assigned to it resembled those for the clarino trumpet. The designation persisted, even though the instrument began to develop a very different personality in the nineteenth century—so much so, in fact, that nineteenth-century composers thought of the clarinet as the nightingale of the orchestra.

Both B♭ and A clarinets are used in the modern symphony orchestra; the determination of which one to use depends most often on the key of the work. For predominantly flat keys, one uses the B♭ clarinet; for sharp keys, the A clarinet serves best. Nevertheless, if we were to make a statistical survey of twentieth-century scores, we would find a greater preponderance of B♭ clarinets, regardless of keys used, especially since the tonal element has been so obscured in much of this music.

Articulation and Tonguing

The following examples show the clarinet as a most agile and versatile instrument, equally effective in lyrical and fast, virtuosic passages in all registers. The clarinet's staccato, though very dry and sharp, is less pointed than that of the oboe, but perhaps a bit more articulate than that of the flute. Single tonguing is mostly used, but some clarinetists are able to perform double and triple tonguing.

Representative Passages from the Literature

Here are some representative clarinet passages from the orchestral literature:

EXAMPLE 7-56. Tchaikovsky, Symphony No. 5, first movement, mm. 1–10

CD-2/TR. 66



EXAMPLE 7-57. Rimsky-Korsakov, *Le Coq d'or* Suite, 33–36 mm. after [4]

CD-2/TR. 67



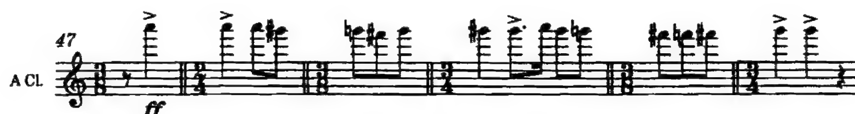
CD-2/TR. 68

EXAMPLE 7-58. Wagner, *Tannhäuser*, Overture, mm. 295–298



CD-2/TR. 69

EXAMPLE 7-59. Stravinsky, *L'Histoire du soldat*, "The Soldier's March," mm. 47–52



ADDITIONAL PASSAGES FOR STUDY

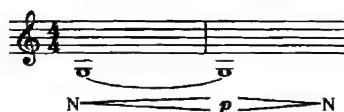
Beethoven, Symphony No. 6, second movement, mm. 72–77
Copland, *El Salón México*, mm. 294–308
Kodály, *Dances of Galanta*, mm. 43–57
Mendelssohn, Symphony No. 3, second movement, mm. 8–16
Mussorgsky, *Night on the Bare Mountain*, mm. 432–440
Prokofiev, Symphony No. 5, second movement, mm. 82–88
Tchaikovsky, Symphony No. 6, first movement, mm. 325–335
Thomas, *Mignon*, Overture, mm. 1–11
Weber, *Oberon*, Overture, mm. 64–72

The *Niente* Attack and Subtones

Two effects that can be achieved on the clarinet better than on any other woodwind instrument are the *niente* attack and the playing of subtones. Example 7-60 shows a *niente* attack, in which the tone starts from almost complete silence, without articulation, grows to a *piano* dynamic, and then fades away to nothing. In the notation, the "N" indicates such an attack to the performer:

CD-2/TR. 70

EXAMPLE 7-60. *Niente* Attack



Example 7-61 shows the extremely soft dynamic that is often called for in many recent scores. Variously called *subtone, echo tone,* or an indication to play *sotto voce,* this dynamic can only be played by the clarinet:

CD-2/TR. 71

EXAMPLE 7-61. Subtones



Subtones in the low chalumeau register, which are phenomenally quiet and ethereal, are favorites of many contemporary composers.

EXAMPLE 7-62. Subtones in the Chalumeau Register

CD-2/TR. 72



*The symbol † denotes a bent tone, as discussed below. See also Example 7-39 on p. 197 above.

Trills and Tremolos

There are no trills or tremolos that cannot be negotiated on the clarinet. The larger-interval tremolos are more difficult above the staff, but are certainly possible. Here is a passage with both trills and tremolos:

EXAMPLE 7-63. Kodály, *Psalmus hungaricus*, 2–7 mm. after [20]

CD-2/TR. 73



Coloristic Effects

The ease with which the clarinet can execute glissandi between notes has been demonstrated in Chapter 6. Playing a glissando over the "break," however, is difficult; and it is easier to perform glissandi above the break than below. Remember that glissandi can only be played upward. A player can "bend" the tone downward, but that is accomplished by the embouchure alone and should only be used if microtones are desired. In the following example, bent tones are indicated with the symbol †.

EXAMPLE 7-64. Bending the Tone

CD-2/TR. 74



Key clicks, blowing air through the tube, and playing pitches through the mouthpiece separated from the rest of the instrument are common contemporary devices, as are multiphonics for the clarinet. Notation for these devices, however, has yet to be standardized. Therefore, the composer must not expect every orchestral clarinetist to play all these new techniques successfully, and in addition, should describe in words, besides symbols, exactly what should happen.

Multiple Clarinets

Like flutes and oboes, clarinets generally come in pairs. But in the enlarged orchestra since Wagner, as many as three or more clarinets may be called for, in addition to the "piccolo" clarinets, bass clarinets, alto clarinets, basset horns, and even contrabass clarinets.

The clarinets in multiples may play in unison, alternate parts, or two or more completely independent parts in different registers.

CD-2/TR. 75

EXAMPLE 7-65. Mendelssohn, *Fingal's Cave* or *Hebrides* Overture, mm. 202–214

Allegro moderato
202
1.
2 A Cl.
pp
tranq. assai
206
2.
p
p
dolce
211
dim.

CD-2/TR. 76

EXAMPLE 7-66. Mozart, Symphony No. 39, third movement, Trio, mm. 1–8

1
2 B♭ Cl.

CD-2/TR. 77

EXAMPLE 7-67. Mahler, Symphony No. 7, fifth movement, 6–9 mm. after 252

Quasi andante
B♭ Cl. 1, 2
A Cl. 3
p
ff
sfp
a 2

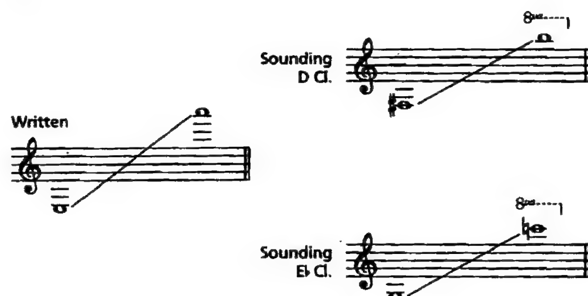
ADDITIONAL PASSAGES FOR STUDY

Mozart, *Cosí fan tutte*, Act I, "Come scoglio immoto resta," mm. 15–19; and Act II, Scene 4, mm. 1–24
Stravinsky, *Petrushka*, Second Tableau, "Petrushka's Room," at 49, mm. 1–4
Wagner, *Siegfried*, Act III, Scene 3, mm. 93–100

"PICCOLO" CLARINET: CLARINET IN D OR E♭

The two small clarinets that extend the range of the clarinet family upward stand in the same pitch relationship as the B♭ and A instruments and were created for similar considerations of key. However, the clarinet in D is seldom, if ever, used today, and therefore we recommend that all "piccolo" clarinet parts be written for the E♭ clarinet. Both the D and E♭ clarinets have the same mechanical and fingering systems, a factor that facilitates playing parts originally written for the D clarinet on the E♭ clarinet; the player simply transposes all pitches down a half step.

EXAMPLE 7-68. Range



The following points should be taken into consideration when writing for the "piccolo" clarinet, particularly since it is smaller in size than the B♭ and A clarinets:

1. When a B♭ or A clarinet player has to switch to E♭ clarinet, be sure he or she has enough time to change instruments and allow for adjustment.
2. The "piccolo" clarinet is more difficult to play than its siblings; since it requires greater effort, frequent rest periods are recommended.
3. It is constructed in such a way as to emphasize its upper register, which is quite shrill. The safest upper note is written G^6, although A above that is certainly possible. Its lower range is quite thin.
4. The E♭ clarinet is used a great deal as a high solo instrument, having such a penetrating tone in that range, but its personality mixes well with the other clarinets as a contrapuntal or harmonic partner. This clarinet is an excellent doubler of the flute, violin, and even high trumpet.
5. It has an incisive staccato and an effective legato, and is able to perform any trills, tremolos, and special effects desired of the other clarinets. The E♭ clarinet also is capable of a full range of dynamics anywhere in its range, except possibly in the last major 3rd of its extreme high register.

Examples of the E♭ clarinet from the literature include:

EXAMPLE 7-69. Berlioz, *Symphonie fantastique*, fifth movement, mm. 40–45

CD-2/TR. 78
INDEX 1 / 0:00

40 Allegro (♩. = 104)

E♭ Cl. — *poco f* — *cresc.*

Ob. 2 C Cl. — *poco f*

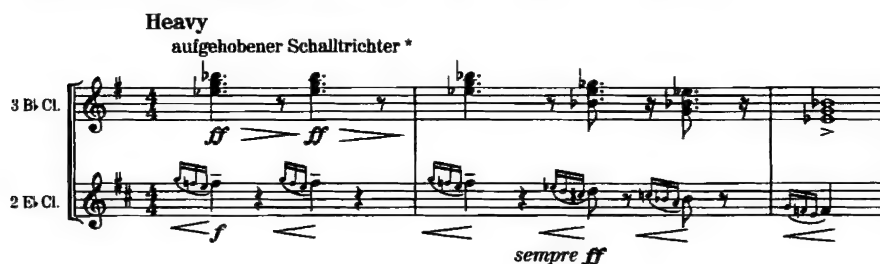
CD-2/TR. 78
INDEX 2 / 0:11

EXAMPLE 7-70. R. Strauss, *Till Eulenspiegel*, 43 mm. before the end



CD-2/TR. 78
INDEX 3 / 0:31

EXAMPLE 7-71. Mahler, Symphony No. 3, first movement, at 12



*Mahler uses this effect ("bells up") frequently for all clarinets.

Additional citations from music literature may be found on p. 214.

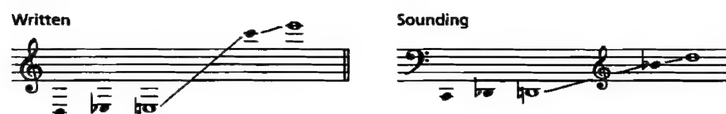
CD-ROM
CD-2
BASS CLARINET

BASS CLARINET

Clarinetto basso (It.); Clarinette basse (Fr.); Bassklarinette (Ger.)

The bass clarinet is most commonly a B♭ instrument, although composers in the past have asked for a bass clarinet in A. For a long time E[3] was the lowest note on the B♭ bass clarinet, but composers had long desired to expand its range downward, and finally an E♭ was added to the instrument. In the 1930s and 1940s Russian composers in particular called for a further expansion of its range, resulting in a bass clarinet whose sound extended down to low C[2]. Today one can reasonably expect every bass clarinet to have a low E♭; but since not all orchestras have instruments with the C extension, writing for the instrument in this very low range can be risky.

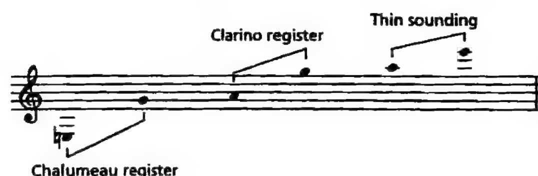
EXAMPLE 7-72. Range



When notating a bass clarinet part the composer or orchestrator has to decide which clef to use. In late-nineteenth- and early-twentieth-century scores—especially those in Germany—the instrument is notated in the bass clef (see Examples 7-74 through 7-77) and all pitches sound a major 2nd below what is notated. During the nineteenth century but especially into the twentieth, the French started notating the B♭ bass clarinet in the treble clef (whereby all pitches sound a major 9th below what is notated), and this method has now become widely adopted. We recommend that the French method be used when creating scores today.

The bass clarinet has essentially the same register designations as the B♭ clarinet.

EXAMPLE 7-73. Registral Characteristics



Here are some special considerations to remember when writing for the bass clarinet:

1. Because this is a bass instrument and the bass member of the clarinet family, the chalumeau register, which spans the first octave and a third, has the most distinctive and warmest tone. It can sound mysterious, shadowy, or sinister, but as it goes up it loses some of this quality.
2. The clarino register spans A^4 to G^5.
3. Although the upper notes, from G^5 to C^6 or even E^6, are thin and very difficult to produce, they are often called for, particularly in modern scores.

The bass clarinet can play lyrical legato as well as all kinds of staccato passages, but because of its size it speaks a bit less incisively than its smaller relatives.

Here are some examples from the literature that demonstrate the different registers as well as the bass clarinet in combination with other clarinets:

EXAMPLE 7-74. Wagner, *Die Götterdämmerung*, Act I, Scene 3, mm. 1–13

CD-2/TR. 79

Im Zeitmass noch mehr zurückhaltend

CD-2/TR. 80

EXAMPLE 7-75. Wagner, *Tristan und Isolde*, Prelude to Act II, mm. 13–20

Moderato

CD-2/TR. 81

EXAMPLE 7-76. Stravinsky, *Le Sacre du printemps*, Part I, "L'Adoration de la terre," mm. 28–31

Più mosso (♩ = 64)

CD-2/TR. 82

EXAMPLE 7-77. R. Strauss, *Salome*, at 320

Ziemlich langsam

Sehr gedehnt

ADDITIONAL PASSAGES FOR STUDY

Barber, *Medea*, "Dance of Vengeance" (both E♭ and bass clarinets)
Berg, *Wozzeck*, Act III, Scene 1 (two E♭ clarinets in unison)
Carter, *Concerto for Orchestra* (1969) (both E♭ and bass clarinets)
Chávez, *Sinfonía India* (both E♭ and bass clarinets)
J. Corigliano, *Pied Piper Fantasy; Altered States* (both E♭ and bass clarinets)
P. Glass, Symphony No. 2 (both E♭ and bass clarinets)
J. Harbison, Symphony No. 2; *Ulysses* (both E♭ and bass clarinets)
Ravel, *Daphnis et Chloé* ballet, 5 mm. before 202 to 202 (E♭ clarinet)
R. Strauss, *Ein Heldenleben*, mm. 124–129 (E♭ clarinet)
R. Strauss, *Don Quixote*, Variation I, mm. 2–4 (bass clarinet)

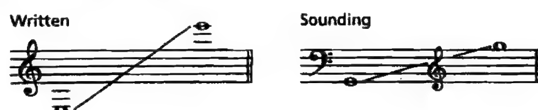
OTHER MEMBERS OF THE CLARINET FAMILY

Alto Clarinet in E♭

Clarinetto alto (It.); Clarinette alto (Fr.); Altklarinette (Ger.)

The alto clarinet in E♭ is seldom, if ever, used in the orchestra, but it has become a more or less regular member of the standard band and wind ensemble. It has the same fingering and mechanical system as the B♭ or A clarinets, but only the lowest two octaves of its range speak effectively.

EXAMPLE 7-78. Range



Because its sound is rather unassertive, the alto clarinet is most useful for filling in the harmony and for playing soft solo passages. Good performers on the instrument can play legato as well as staccato passages; long, lyrical melodies are as easy for them as fast, agile runs.

Since so few orchestral scores have made use of this instrument, we will give a passage from the band and wind ensemble literature:

EXAMPLE 7-79. I. Dahl, *Sinfonietta*, second movement, mm. 1–5

CD-2/TR. 83

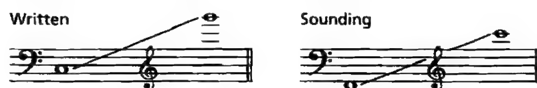


Basset Horn

Corno di bassetto (It.); Cor de basset (Fr.); Bassetthorn (Ger.)

The basset horn is sometimes described as the orchestral tenor clarinet. Like the English horn, it always transposes a perfect 5th down; it also is certainly not a horn but is so called probably because of its sickle shape. The term *basset* may be interpreted as a diminutive form of *bass*. Invented in about 1770 by the Mayrhofers, this instrument is rarely called for in post-Strauss twentieth-century scores. However, basset horns are manufactured today so that the works of the past can be performed on instruments for which they were originally written.

EXAMPLE 7-80. Range



The bore of the basset horn is somewhat narrower than that of the alto or bass clarinet, producing a distinctive timbre described by one musician as portraying "unctuous seriousness." Here is an example of the basset horn in the orchestral literature:

CD-2/TR. 84

EXAMPLE 7-81. R. Strauss, *Capriccio*, Scene 2, mm. 22–26

Allegro moderato

Basset Hn.

p

p

dim. .... *pp*

ADDITIONAL PASSAGES FOR STUDY

Mozart, Clarinet Concerto, K. 622 (originally written for "basset clarinet")
Mozart, *Die Zauberflöte*, Act II, "O Isis und Osiris"
Mozart, Requiem, Agnus Dei, "Dona eis requiem," mm. 14–17
R. Strauss, *Der Rosenkavalier*, Act I, Introduction
Stravinsky, *Threni* (calls for alto clarinet or basset horn)

Contrabass Clarinet

This clarinet, in B♭ or E♭, has a range an octave lower than that of the bass clarinet. In distinction to most clarinets, which are made of wood (except for the bass clarinet and alto clarinet bells), the contrabass clarinet is made of metal and is folded in on itself, thereby looking like a diminutive contrabassoon.*

EXAMPLE 7-82. Range

B♭: Written

Sounding

E♭: Written

Sounding

The instrument has a very rich sound, especially in its lowest register, but it does not have the agility of the bass clarinet. Since the contrabass clarinet is of rather recent vintage, it does not appear in many orchestral scores, but is used frequently in works for band and wind ensemble.

*The contrabass clarinet in E♭ is often referred to as the contra alto clarinet, and is usually made of rosewood rather than metal.

Here is a passage that uses the B♭ contrabass clarinet:

EXAMPLE 7-83. G. Schuller, Concerto for Orchestra No. 2, second movement, mm. 113–120

CD-2/TR. 85



SAXOPHONE

Sassofono (IT.); Saxophon (GER.)

CD-ROM
CD-2
ALTO SAXOPHONE



RAYMON RICKER, ALTO SAXOPHONE

Though made of brass and having a conical pipe, the saxophones are included in this chapter for several important reasons: (1) their tone is closer to the clarinet family than to any other; (2) they are played with a mouthpiece and a single reed very much like that of the clarinet; (3) most clarinetists double on saxophones because the fingering and all other playing techniques are very similar to those of the clarinet; and (4) the instrument is used primarily as a member of the woodwind rather than the brass choir.

The saxophone was invented by Adolphe Sax in Paris around 1840. Today there are a great variety of saxophones, used very extensively and in multiple numbers in band and jazz band literature but in a limited way in standard orchestral repertoire. The saxophone family has never been fully accepted into the symphony orchestra, though a great many composers of the nineteenth and twentieth centuries have used saxophones to great advantage,

THE SAXOPHONE FAMILY



B♭ soprano sax



E♭ alto sax



B♭ tenor sax



E♭ baritone sax



B♭ bass sax

especially in solo passages. The sound of all saxes is quite distinctive, and tends to overpower other instruments of the symphony orchestra, which may be one reason they have not been used more extensively in this medium. A second reason may be that the manner of playing the instrument and the sound it produced in its early days was considered too primitive. This situation has changed considerably since the 1920s, and the great virtuosos of today, with their fantastic control of every register in each instrument of the family, continue to convince composers to incorporate the saxophone in their pieces.

Range and Registral Characteristics

Most players have difficulty playing very softly at both ends of the range, most especially at the very bottom of it. The register after the first perfect 5th on each instrument for almost two octaves up can be controlled beautifully, however.

EXAMPLE 7-84. Range and Transpositions of All Saxophones

All saxes — Written

E♭ Sopranino (minor 3rd up) — Sounding — 8va

B♭ Soprano (major 2nd down) — Sounding

E♭ Alto (major 6th down) — Sounding

B♭ Tenor (major 9th down) — Sounding

E♭ Baritone (major 13th down) — Sounding

B♭ Bass (2 octaves + a major 2nd down) — Sounding

Composers have distinguished between two different sounds on the saxophone: the jazz sound, which is either quite sweet, sentimental, and full of vibrato or very raucous, and the symphonic or classical sound, which tends to contain less vibrato and be more dynamically controlled. Although many com-

posers of the earlier twentieth century have used the saxophone to suggest jazz or popular music, those living today have incorporated the growing variety of playing techniques that have been developed by the great saxophone players.

The Saxophone in the Symphony Orchestra

Symphonic composers have made most use of the alto saxophone (in E♭), but soprano, tenor, and baritone are also in evidence in some pieces. In the symphonic or concert band, the saxophone family is usually represented more fully, in one of the following complements:

1. two altos	2. one soprano
one tenor	one or two altos
one baritone	one tenor
(one bass)	one baritone
	(one bass)

The sopranino saxophone in F is very seldom if ever used, but we mention it here because Ravel gave it prominence in his *Bolero*, and this instrument also appears in chamber music.

EXAMPLE 7-85. Ravel, *Bolero*, 2–18 mm. after [7] (sopranino in F and soprano in B♭)

CD-2/TR. 86

Here are two examples of the saxophone in orchestral music since 1840; other examples from the band and wind ensemble repertoire may be found in Chapters 17 and 19.

CD-2/TR. 87

EXAMPLE 7-86. Bizet, *L'Arlésienne* Suite No. 2, second movement, mm. 17–20 (alto)



CD-2/TR. 88

EXAMPLE 7-87. R. Strauss, *Sinfonia domestica*, mm. 950–951 and mm. 964–984

ADDITIONAL PASSAGES FOR STUDY

Berg, *Der Wein*; Violin Concerto; *Lulu* (alto saxophone)
J. A. Carpenter, *Skyscrapers* (alto, tenor, baritone saxophones)
Copland, Piano Concerto, mm. 254–256 (soprano saxophone)
Gershwin, *An American in Paris*, mm. 1–9 after [63], with upbeat (alto saxophone)
J. Harbison, *Remembering Gatsby* (soprano saxophone)
Harris, Symphony No. 5 (tenor saxophone)
Khachaturian, *Gayne* ballet, "Saber Dance," one measure before [5] (alto saxophone)
Musorgsky-Ravel, *Pictures at an Exhibition*, "The Old Castle," mm. 7–14 (alto saxophone)
Penderecki, *St. Luke Passion* (two alto saxophones)
Prokofiev, *Lieutenant Kijé*, second movement, mm. 1–4 after [18] (tenor saxophone)

Rachmaninoff, *Symphonic Dances*, first movement, mm. 105–120 (alto saxophone)
Vaughan Williams, Symphony No. 6, first movement, mm. 5–10 (tenor saxophone)
Walton, *Belshazzar's Feast* (alto saxophone)
F. Waxman, *Joshua*, Rehab's aria (with alto saxophone)

BASSOON

CD-ROM
CD-2
BASSOON

Fagotto (It.); Basson (Fr.); Fagott (Ger.)

The bassoon, a double-reed instrument with a conical bore, is the bass voice of the wind section. The reed is fitted onto a curved metal mouthpipe called the *crook* or *bocal*. The pitch can be adjusted by pulling this mouthpipe out slightly, thus lengthening it, or pushing it in a bit to shorten it. Although the bassoon, by virtue of its double reed and conical shape, is related to the oboe, its tone is less nasal. Like the oboe, the bassoon performs lyric melodies beautifully and produces attacks and staccato passages as incisively.

Range and Registral Characteristics

The bassoon is notated in the bass clef, but uses the tenor clef when the ledger lines begin to accumulate (from about the G above middle C upward).

EXAMPLE 7-88. Range



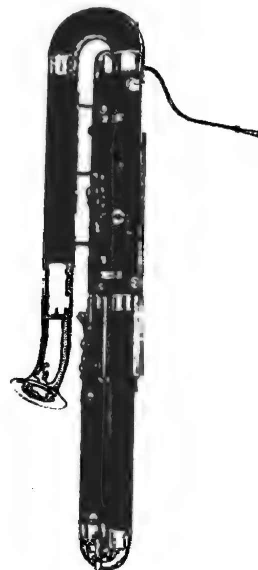
THE BASSOON FAMILY



K. DAVID VAN HOESEN, BASSOON

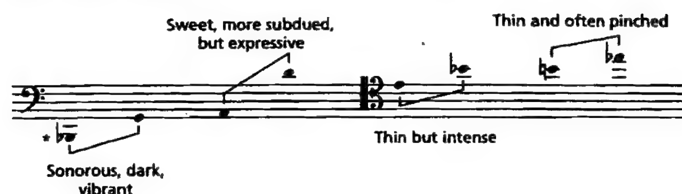


bassoon



contrabassoon

EXAMPLE 7-89. Registral Characteristics



*A few works, such as Nielsen's woodwind quintet, call for an A below the lowest B♭. Bassoonists produce this note by placing a small cardboard tube into the open end of the instrument.

As a solo instrument, the bassoon is superb in all its registers, but when accompanied it has a tendency to get swallowed up by the sound of other instruments, especially in its higher registers. The low register is a very strong and noble bass for the woodwind choir, and has also been a favorite register in which to double the cellos and basses. In this latter combination the cello tone predominates, but the doubling bassoon or bassoons give added body to the sound.

A versatile and agile instrument, the bassoon has been a favorite solo instrument of orchestral composers since the Baroque period. They have exploited its dark, foreboding lower range as well as its pinched, extreme high notes, the latter used most famously by Stravinsky at the beginning of his *Le Sacre du printemps* (see Example 7-94); people at the first performance of this work mistook the bassoon for a solo saxophone. Other composers have treated the bassoon as the "clown of the orchestra" and have written staccato passages for it that truly sound humorous.

Caution must be exercised when writing dynamics for the bassoon. It is extremely difficult to play the notes of the lowest perfect 5th *pianissimo*; rather, they must be played with a firmer attack in order to speak clearly. The extreme upper perfect 5th also does not project so well as most of the lower registers. If a bassoon solo is accompanied in this register, the dynamics of the accompanying instruments should be soft enough not to overshadow the soloist.

Articulation and Tonguing

Single tonguing is the norm for the bassoon and can be executed with remarkable speed. Although double and triple tonguing are seldom called for, some performers are able to perform these techniques. Upward slurs can be played with great rapidity, and large skips are quite easily performed, even between the extreme registers. However, because of the mechanics of the instrument, some downward skips are very difficult.

Trills and Tremolos

Trills are most effective on the bassoon, although the following should be avoided because the fingering is too awkward:

EXAMPLE 7-90. Trills to Avoid



*Some instruments have a special trill key for this trill.

For the same reason, avoid all trills from C^5 ( ) up, except , , and —but use the last only if the instrument has an extra E key. Tremolos are not very idiomatic; if they are written for the bassoon they should never exceed a perfect 4th.

Representative Passages from the Literature

Here are some examples of significant bassoon passages from the orchestral literature:

EXAMPLE 7-91. Mozart, *Le Nozze di Figaro*, Overture, mm. 1–7

CD-2/TR. 89



EXAMPLE 7-92. Bizet, *Carmen*, Entr'acte before Act II, mm. 1–20

CD-2/TR. 90



EXAMPLE 7-93. Tchaikovsky, Symphony No. 6, first movement, mm. 1–12

CD-2/TR. 91



CD-2/TR. 92

EXAMPLE 7-94. Stravinsky, *Le Sacre du printemps*, Part I, "L'Adoration de la terre," mm. 1–15

Lento
ad lib.
Bsn. solo
poco accel.
a tempo
p
poco più *f*

ADDITIONAL PASSAGES FOR STUDY

Beethoven, Symphony No. 4, fourth movement, mm. 184–187
Haydn, Symphony No. 103 ("Drum Roll"), second movement, mm. 74–84
Haydn, Symphony No. 104 ("London"), second movement, mm. 17–25
Mahler, Symphony No. 9, second movement, mm. 8–15
Mozart, Symphony No. 38, first movement, mm. 111–115
Prokofiev, *Peter and the Wolf*, at [15], mm. 1–6
Ravel, *Bolero*, mm. 41–48
Rimsky-Korsakov, *Sheherazade*, second movement, at [I], mm. 2–7
Tchaikovsky, Symphony No. 5, third movement, mm. 197–205

Multiple Bassoons

As with the flutes, oboes, and clarinets, the basic orchestral complement of bassoons is two. As the symphony orchestra expanded, bassoons in threes and even fours were employed, with the last usually doubling on the contrabassoon. The bassoons in multiples have been used in many ways, from unisons and parallel interval passages to complex contrapuntal phrases. Here are two passages for two or three bassoons, without contrabassoon:

CD-2/TR. 93
INDEX 1 / 0:00

EXAMPLE 7-95. Dukas, *L'Apprenti sorcier*, mm. 72–99

Vif
a 3 soli
Bsn.
mf



EXAMPLE 7-96. Bartók, *Concerto for Orchestra*, second movement, mm. 164–171

CD-2/TR. 93
INDEX 2 / 0:20

Allegretto scherzando

Bsn. 1
Bsn. 2
Bsn. 3

p staccato

ADDITIONAL PASSAGES FOR STUDY

Berlioz, *Symphonie fantastique*, fifth movement, mm. 255–277
Bizet, *L'Arlésienne* Suite No. 2, fourth movement, mm. 10–16
Debussy, *Nocturnes*, "Fêtes," mm. 33–35
Mozart, Symphony No. 40, second movement, mm. 68–71
R. Strauss, *Don Juan*, mm. 1–3
Tchaikovsky, Symphony No. 6, fourth movement, mm. 21–36
Wagner, *Tristan und Isolde*, Act III, "Mild und leise," mm. 9–12

CONTRABASSOON

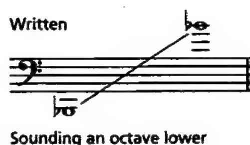
Contrafagotto (It.); Contrebasson (Fr.); Kontrafagott (Ger.)

CD-ROM
CD-2
CONTRABASSOON

Although the oboe and bassoon have no auxiliaries that extend their ranges upward, both have instruments that extend the range downward. The contrabassoon, the lowest of the woodwinds, widens the bassoon's range by an octave. It sounds an octave lower than notated.

Range and Registral Characteristics

EXAMPLE 7-97. Range



The contrabassoon uses essentially the same techniques as the bassoon, only the articulation on this larger instrument, especially in its lowest register, is a bit more stubborn and resistant, and speaks more slowly. This factor has created an impression of clumsiness, which has often been exploited by composers. In fact, the lowest 12th is its more effective range.

When tones are sustained, the contrabassoon acts like a thirty-two-foot organ pipe; the tones have a "buzz" because of the slow vibrations, but they provide a solid foundation for a chord or passage, especially when doubling cellos, basses, and bassoons at the octave. Notes in this lower range take a considerable amount of breath to produce; therefore, the composer or orchestrator should provide periodic rests throughout the passage.

Even though many composers have asked contrabassoon players to play in the instrument's higher (and even in its highest) register, this takes the instrument out of its most characteristic range and makes it just another bassoon, a little weaker and paler than its relatives.

Articulation and Tonguing

Both legato and staccato passages are effective on the contrabassoon; staccato, however, is difficult to execute quickly since the air column on the instrument is too large and responds too sluggishly, especially at the lower end of the register. Therefore, it is best to avoid fast, repeated staccato notes.

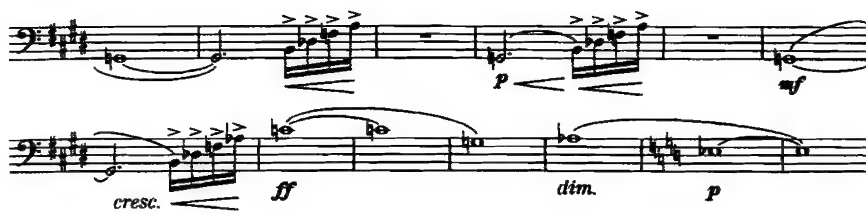
Representative Passages from the Literature

There are few contrabassoon solo passages in the orchestral literature, fewer concertos aside from that by Gunther Schuller. Rather, composers tend to blend this instrument in with others, as the second of the following four passages demonstrates:

CD-2/TR. 94

EXAMPLE 7-98. R. Strauss, *Salome*, Scene 3, 6–27 mm. after [151]





EXAMPLE 7-99. Brahms, *Variations on a Theme by Haydn*, mm. 1–10

CD-2/TR. 95

1 Andante

Picc.
Fl.
Ob.
B♭ Cl.
Bsn.
Cbsn.
B♭ basso Hn. 1
B♭ basso Hn. 2
E♭ Hn. 3
E♭ Hn. 4
B♭ Tpt.
Timp.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ten. ten. pizz. p f mf

CD-2/TR. 96

EXAMPLE 7-100. Ravel, *Ma mère l'oye*, "Les entretiens de la belle et la bête," mm. 114–123

CD-2/TR. 97

EXAMPLE 7-101. Ravel, *La Valse*, [37]–[38]

ADDITIONAL PASSAGES FOR STUDY

Beethoven, *Fidelio*, Act II, Duet between Leonore and Rocco, starting in m. 28 (in unison with muted cellos and basses)

Beethoven, Symphony No. 9, fourth movement, Alla marcia, mm. 1–28 (see pp. 497–500 in this volume)

Bloch, *Schelomo*, last 5 mm.

Brahms, Symphony No. 1, fourth movement, mm. 47–51

H. Gorecki, *Beatus vir* (two contrabassoons)

Mahler, Symphony No. 9, second movement, mm. 35–28 before the end

G. Schuller, Concerto for Contrabassoon and Orchestra

R. Strauss, *Elektra*, at 186, mm. 1–18

R. Strauss, *Till Eulenspiegel*, mm. 551–558

8

Scoring for Woodwinds and Woodwind-String Combinations

Though the chamber music repertoire for winds is quite extensive, very few larger works for winds that rival those for string orchestra have been composed over the past three centuries. Exceptions are the divertimenti and serenades of Mozart, the serenades of Dvořák and Richard Strauss, and the symphonies of Gounod and Milhaud, all of which are appearing more and more frequently on symphonic programs. In most of these works two or more horns are included as part of the woodwind section. We will discuss why this is so later in this chapter.

The Role of Winds in the Symphony Orchestra

The string choir is fairly homogeneous in sound and plays almost continuously throughout most orchestral compositions. In contrast, the woodwind choir's sound is heterogeneous, as we will see, and is usually reserved for specific functions. The woodwinds' most common functions have been:

1. to play solo passages—either entire melodies, melodic fragments, or smaller melodic gestures;
2. to provide a harmonic background for a string foreground;
3. to provide a contrasting color, repeating or echoing a passage previously played by the strings or playing part of a passage that is divided between strings and winds; and
4. to double other instruments of the orchestra.

As we examine the use of winds in the symphony orchestra it will become obvious just how different each instrument sounds from the others in the section. We will see that sometimes it is not easy to determine quickly why a composer chose the instrumental color or color combination of a particular group of woodwinds to state a particular theme. For instance:

1. Why did Schubert use unison oboe and clarinet for the first theme in his "Unfinished Symphony"?
2. Why did Debussy assign a unison flute and oboe to play the long theme in the final movement of *La Mer*?
3. Why did Berlioz choose the English horn to express despair in his *Symphonie fantastique*?
4. Why did Stravinsky open *Le Sacre du printemps* with a high bassoon?

Clearly questions of taste, color preference, and perhaps even prejudice come to the fore. As we experiment with the examples from symphonic literature in this chapter we will see why certain instruments or instrumental combinations were chosen—in others words, how they work better in specific situations than would other wind instruments or instrumental combinations. Rimsky-Korsakov once said, "To orchestrate is to create, and this cannot be taught." We hope to refute his statement by methodically presenting widely used orchestration techniques for the woodwind section so that the student orchestrator will gain a solid grasp of certain principles. We encourage you to become thoroughly familiar with these principles, for they can be successfully relied on in a variety of orchestral situations.

We will begin by examining an extended excerpt from Schubert's Symphony No. 8 in B minor ("Unfinished"), and extract from it some basic principles of how the woodwind section can be assigned the melody or the harmony. After that, we will examine the woodwind roles of providing the melody and the harmony in more detail before focusing on how winds can provide contrasting color as well as double other orchestral instruments. Finally, we will examine some novel articulations and new techniques for woodwinds before closing with a short treatment of transcribing piano music for winds.

Using the Woodwind Section to Provide the Melody and Harmony

As Provider of Melody

After the opening twelve measures of his Symphony No. 8 in B minor, Schubert uses instruments of the woodwind section—the first oboe and first clarinet in unison—to introduce the first major theme. The theme carries well in both instruments, which can easily play *pianissimo* in this register.

CD-3/TR. 18

EXAMPLE 8-1. Schubert, Symphony No. 8, first movement, mm. 12–36

12 Allegro Moderato *pp*

Ob.

A Cl.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

17

Ob.
A Cl.
Bsn.
D Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

fz p arco pizz.

22

Fl.
Ob.
A Cl.
Bsn.
D Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

pp p arco

Fl.
Ob.
A Cl.
Bsn.
D Hn.
E Tpt.
Alt., Ten. Trb.
Bs. Trb.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Many orchestration books have directed students not to use this doubling in a melody for the following reasons:

1. The oboe, with its nasal quality, will overshadow the clarinet.
2. The conductor will have to balance the two by having the oboe play more softly.
3. Clarinet and oboe may have difficulty staying in tune with each other.

How fortunate that Schubert did not read any of these books! By doubling the oboe with the clarinet, he created a passage with a mysterious color. Every live performance of this passage will sound slightly different; the instruments, the players, and the acoustics of the hall will all play a part.

Let us work through the choices that Schubert had at his disposal but did not make so that we can more readily appreciate the instrumental combination that he did choose to introduce the main theme. First let us combine flute and oboe to play the same passage. The oboe, in a more advantageous register, will stand out, but the flute will neutralize the nasal quality of the oboe and give the passage a rounder, richer sound.

EXAMPLE 8-2. Schubert, Symphony No. 8, first movement, first theme scored for flute and oboe

CD-3/TR. 19
INDEX 1 / 0:00

Allegro moderato
12
Fl.
Ob.

If we combine flute with clarinet, we eliminate the bite of the oboe sound, but the clarinet stands out almost exclusively: the flute is in a nonbrilliant register, contributing little more than a thickening of the resulting tone.

EXAMPLE 8-3. Schubert, Symphony No. 8, first movement, first theme scored for flute and clarinet

CD-3/TR. 19
INDEX 2 / 0:17

Allegro moderato
12
Fl.
A Cl.

The bassoon, which cannot play this melody in the same range as the flute, oboe, or clarinet, could instead be doubled with any one of these instruments at the octave. Any of these combinations would be quite sonorous. Example 8-4 gives a version for oboe and bassoon, and Example 8-5 for flute, clarinet, and bassoon in a three-octave spread, which was one of Mozart's favorite color combinations.*

CD-3/TR. 19
INDEX 3 / 0:36

EXAMPLE 8-4. Schubert, Symphony No. 8, first movement, first theme scored for oboe and bassoon

CD-3/TR. 19
INDEX 4 / 0:54

EXAMPLE 8-5. Schubert, Symphony No. 8, first movement, first theme scored for flute, clarinet, and bassoon

But we would jump the gun if we used the octave doubling in Examples 8-4 and 8-5, thereby diminishing the effect of Schubert's expansion of registers in measures 20–21 as well as the climactic cadence in measures 28–29; these renditions, therefore, would not be acceptable for the opening statement of the theme. In Schubert's actual score the flute enters almost undetected in measure 26, when it doubles the oboe for the crescendo, but it is not really heard until it plays the highest notes of the cadential chords in measures 28–29.

As Provider of Accompaniment

Now let us examine how Schubert uses the woodwinds in a different role, as accompaniment, in the introduction to the second theme of this movement. In

---

*Mozart used this combination in such famous works as his Piano Concerto in C Major, K. 503, first movement, measures 76–82, and third movement, measures 83–91, as well as in his opera *Le Nozze di Figaro*, in the duet from Act I, scene 1, measures 67–73. Similar combinations can also be heard in *Le Nozze di Figaro*, in the aria "Venite inginocchiatevi" from Act II, scene 3 (clarinet and bassoon); the aria "Dove sono" from Act III, scene 8 (oboe and bassoon); and the chorus "Ricevete, o padroncina" from Act III, scene 11 (flute and bassoon).

Example 8-6, notice how the clarinets combine first with the violas and then with the bassoons to create an off-the-beat accompaniment pattern.

EXAMPLE 8-6. Schubert, Symphony No. 8, first movement, mm. 36–80

CD-3/TR. 20

Allegro moderato

52
2 A Cl.
2 Bsn.
pp
2 D Hn.
pp
Vln. 1
pp
Vln. 2
pp
Vla.
Vlc.
D.B.

60
2 Fl.
a 2
ffz *fz* *fz*
2 Ob.
a 2
ffz *fz* *fz*
2 A Cl.
decresc.
a 2
ffz *fz* *fz*
2 Bsn.
decresc.
ffz *fz* *fz*
2 D Hn.
a 2
ffz *fz* *fz*
Alt., Ten. Trb.
Bs. Trb.
ffz *fz* *fz*
Vln. 1
decresc.
ffz *fz* *fz*
Vln. 2
decresc.
ffz *fz* *fz*
Vla.
ffz *fz* *fz*
Vlc.
decresc.
ffz *fz* *fz*
arco
D.B.
decresc.
ffz *fz* *fz*

68

2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
2 E Tpt.
Alt., Ten. Trb.
Bs. Trb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

cresc. *fz* *ffz* *p* a 2

75

2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

f a 2

We can see that by orchestrating each major thematic element differently, Schubert communicates the distinctive quality of each thematic idea more effectively, thereby clarifying the movement's form.

THE VARIETY OF ORCHESTRAL TREATMENTS

We will now analyze how woodwinds can serve each of the functions listed on p. 229.

Melodic Treatment

Unison Doubling

In the previous chapter we discussed assigning the melody to each woodwind instrument in turn. Let us suppose that we have now chosen an appropriate instrument for a certain passage but question whether it will be strong enough to carry the tune alone. In what instances would we double it with the same instrument? In other words, when do two flutes sound louder than one? Or if two clarinets rather than one play the same gesture, will the sound be more intense?

Experts disagree on exact answers to these rather controversial questions. But we can fruitfully discuss the difference *in sound* between one oboe (or other wind instrument) on a part and two oboes on the same part by referring to our description of muted strings and brass (pp. 39 and 307): the string mute, for example, softens the instrument but also changes the instrument's basic color. Similarly, since two of the same wind instruments can never be absolutely in tune with one another, having them play solo passages will upset the overtone balance and thereby thicken the sound—or, in certain registers, even muddy it. Thus, the essential timbre of the solo instrument is altered. Using two like winds for a unison solo also often impedes the expressive quality that one instrument can give to the phrase, whether by adding rubato or using another technique. (We are speaking now of ordinary solo passages in orchestral works, not tutti sections in which sheer volume is required and the display of a characteristic instrumental timbre is immaterial.)

To illustrate this type of difference in sound, let us consider the following tune by Rossini from his *Semiramide* overture, first as a solo on each of the four basic wind instruments and then *a 2*.

EXAMPLE 8-7. Rossini, *Semiramide*, Overture, mm. 178–181, scored for solo and doubled winds

CD-3/TR. 21

178 Allegro

Fl. 1, then a 2

Ob. 1, then a 2

A Cl. 1, then a 2

Bsn. 1, then a 2

Octave Doubling

In Chapter 7 we discussed the benefits of doubling wind passages in octaves, the effect of which is analogous to the organist's use of pipe organ registration to add color and volume to a tone. The organist usually couples the fundamental (eight-foot stop) with an octave (four-foot) and a double octave (two-foot), giving off a transparent but forceful sound. Simply adding more fundamentals (eight-foot stops) would only muddy the sound. Similarly, for winds *a 2* doubling at the octave in many instances is more effective than doubling at the unison.

EXAMPLE 8-8. Rossini, *Semiramide*, Overture, mm. 178–181, scored for solo wind instruments with octave doubling

CD-3/TR. 22

178 Allegro

A Cl. solo

Bsn. 1 solo

178 Allegro

Fl. 1 solo

Ob. 1 solo

Here is how Rossini actually scored the passage, handling the eight-foot–four-foot principle beautifully.

CD-3/TR. 23

EXAMPLE 8-9. Rossini, *Semiramide*, Overture, mm. 177–192

177 Allegro

A Cl. 1 solo
Bsn. 1 solo
Vln. 1
Vln. 2
Vla.
Vlc. D.B.

181

A Cl.
Bsn.
D Hn. 1 solo
Vln. 1
Vln. 2
Vla.
Vlc. D.B.

185
Fl. 1 solo
Ob. 1 solo
A Cl.
A Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

189
Picc.
Fl. 1 solo
Ob. 1 solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Choosing a Color to Characterize or Clarify a Melodic Gesture or Passage

Frequently, particularly in tone poems, a particular instrumental color (or the color of a small group of instruments) is used melodically to represent a person or an object. Or more abstractly, it may represent an *idée fixe* or leitmotif.

Hundreds of examples can be cited from the literature, from Berlioz's use of the clarinet in his *Symphonie fantastique* and Weber's use of two clarinets in his overture to *Der Freischütz* to Strauss's use of the horn in *Till Eulenspiegel* and the incredible bassoon opening of Stravinsky's *Le Sacre du printemps*. We have already mentioned that in the nineteenth century the clarinet was regarded as the nightingale of the orchestra.

Assigning a motive or melody to a particular instrument or group of instruments is an effective way to clarify the form of a piece. For instance, in "Nuages," the first movement of Debussy's *Nocturnes*, a series of parallel chords, introduced by the clarinets and bassoons, opens the work; the only contrasting gesture is played by the English horn, shown in Example 8-10.

CD-3/TR. 24

EXAMPLE 8-10. Debussy, *Nocturnes*, "Nuages," mm. 21–28

We see that the English horn's motive serves to define the beginning and ending sections of the piece; it neatly reintroduces the return of the opening parallel chords at the change back to the original key twenty-three measures before the end. It is not used at all in the movement's middle section. We can thus consider the English horn gesture as clarifying a rough A-B-A form.

In the second *Nocturne*, "Fêtes," Debussy reserves certain colors, made up of specific groups of instruments, each time they appear, such as that which carries the staccato figure in measures 27–29 (Example 8-11).

CD-3/TR. 25

EXAMPLE 8-11. Debussy, *Nocturnes*, "Fêtes," mm. 27–29

This same combination is used again four measures later and then is repeatedly heard in the recapitulation of the first part starting at measure 208 and following. Although this movement is full of a variety of extremely colorful instru-

mental combinations, Debussy chose to have the same instruments iterate each repetition of this melodic fragment.

Harmonic Treatment

Pedal Accompaniment

We will now examine the ways in which composers have used the woodwind section to provide harmony or accompaniment. In many forte tutti passages within the Classical and Romantic repertoire, the winds (with horns) serve to strengthen the harmony by providing one or more pedals to give a strong, continuous, and solid underpinning to the music. Here is the opening statement of the theme from Mozart's Symphony No. 29, K. 201, which is scored for the typical early Classical orchestra.

EXAMPLE 8-12. Mozart, Symphony No. 29, K. 201, first movement, mm. 1–5

CD-3/TR. 26

The first tutti of the movement, given in Example 8-13, shows the traditional use of the pedal A in both the oboes and horns. Often the horns are assigned the same dominant and tonic pedal notes as those given to the oboes in early Classical symphonies; other times they double other wind parts to strengthen them.* For this reason the horns were placed in the score just below the woodwinds (above the trumpets), where they have remained until today.

*From the Classical orchestra onward, horns were considered part woodwind, part brass, and their function was divided. The horn has also been a member of both the woodwind quintet and the brass quintet.

CD-3/TR. 27
INDEX 1 / 0:00

EXAMPLE 8-13. Mozart, Symphony No. 29, K. 201, first movement, mm. 13–23

Allegro moderato

For comparison, let us consider this passage without the tonic pedal. Notice the lack of stability and grandeur without those sustained tones in the first six measures of this example. Notice, too, how much the pedal strengthens the cadence in Example 8-13—especially at the second horn's skip of an octave, which dramatically emphasizes the dissonance.

EXAMPLE 8-14. Mozart, Symphony No. 29, K. 201, first movement, mm. 13–23 without pedal tone

CD-3/TR. 27
INDEX 2 / 0:23

Sustained Accompaniment

Large-scale sustained harmonies played by the woodwinds are a common device of Classical- and Romantic-periods orchestrations. For instance, in the overture to Mozart's *Le Nozze di Figaro,* the underlying harmonies are sustained by the slow counterpoint played by the flute and oboe, which overlies an active string theme. Notice that the bassoon does not take part in this counterpoint but instead doubles the cello melody. As the only nonstring that plays the theme, the bassoon adds a wonderful new color that is audible even when the bassoon plays very softly. Most likely Mozart had pragmatic reasons for giving the melody also to the bassoon: at that time the cello and bass sections in theater orchestras were very small, and bassoons were frequently used to bolster the bass lines. Today the beautiful coloristic effect remains. Notice the wide distance between the strings and the flute and oboe, which adds prominence to the sustained counterpoint without deflecting attention from the major thematic idea.

CD-3/TR. 28

EXAMPLE 8-15. Mozart, *Le Nozze di Figaro*, Overture, mm. 19–42

29

Fl. Ob. A Cl. Bsn. D Hn. D Trb. Timp. Vln. 1 Vln. 2 Vla. Vlc. D.B.

ff a 2 fp D.B. f p

36

Fl. Ob. A Cl. Bsn. D Hn. D Trb. Timp. Vln. 1 Vln. 2 Vla. Vlc. D.B.

fp f p

Sustained harmonies played by the woodwind section are used effectively throughout the overture. For instance, the sustained chords built by the flutes, oboes, and clarinets in measures 35 and following reinforce the tutti cadence of measures 43–45 (Examples 8-15 and 8-16). And immediately thereafter, these cadential harmonies are prolonged by the agitated repetition of the dominant note A^5, played by the violins, a rather common device employed by string sections during this period, as well as by the chordal punctuations of the winds, brass, violas, cellos, and double basses (Example 8-16).

CD-3/TR. 29

EXAMPLE 8-16. Mozart, *Le Nozze di Figaro*, Overture, mm. 43–58

43
Allegro vivace
Fl.
Ob.
A Cl.
Bsn.
D Hn.
a 2
D Trb.
a 2
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

48

Fl.
Ob.
A Cl.
Bsn.
D Hn.
D Trb.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2

53

Fl.
Ob.
A Cl.
Bsn.
D Hn.
D Trb.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

In Example 8-17, from the overture to *Die Fledermaus* by Johann Strauss, Jr., the sustained harmonies, rather than detracting from the light character of this passage, help focus the listener's attention on the sprightly nature of the tune and its accompaniment, as well as tie the passage together harmonically. But

Strauss interrupts this pedal in measure 83, thereby separating the first statement of the melody from the second, so that the anacrusis to the second statement in the first violins is clearly heard. This interruption also provides a natural breathing space for the wind players, and its omission later on contributes to the increasing tension after measure 99.

CD-3/TR. 30

EXAMPLE 6-17. J. Strauss, *Die Fledermaus*, Overture, mm. 76–101 (anacrusis to first statement of theme in m. 76 omitted)

86

Fl.
p
Ob.
A Cl.
p
Bsn.
Vln. 1
Vln. 2
Vla.
arco
Vlc.
D.B.
D.B.

91

Fl.
Ob.
A Cl.
1.
Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

96 a 2 poco rit. poco rit. poco rit. poco rit. poco rit. poco rit. poco rit.
A Cl. Bsn. F Hn. 1, 2 Vln. 1 Vln. 2 Vla. Vlc. D.B.

Studying the Mozart and Strauss overtures for the different ways in which harmonic gestures can be sustained leads to a deeper appreciation of orchestral scoring typical of the late eighteenth and nineteenth centuries. We urge you to explore these scores further to find other instances where sustained harmonies, including pedals, are carried by the woodwind section. When called on to orchestrate or transcribe a work in this style, you should employ this type of scoring whenever possible.

We will now focus on writing homophonically and contrapuntally for woodwinds. Depending on the context, the winds will carry either the melody or create the harmony in these passages.

HOMOPHONIC WRITING FOR WINDS

The wind choir with or without horns was not widely used in homophonic passages until the nineteenth century. But from that time on we find many examples of purely homophonic writing, as brief as four measures to as long as entire passages.

As a preliminary exercise, we suggest that you reduce to piano texture Examples 8-11, 8-29, and 8-40. Analyze the doubling and spacing of each melodic line and chord and the voice leading of the harmonic progressions, and notice how the composer has made most effective use of the registers of each wind instrument. In the reduction, the melody should come through clearly (that is, if it is important) and not be obscured by the harmony. If the chord progression itself is the primary interest, then it must be reduced from the orchestral texture in a way that mimics the registral distinctions of the wind

instruments that the composer originally used to effect a light or dark shading, a loud or soft dynamic, a chord in root position or inverted.

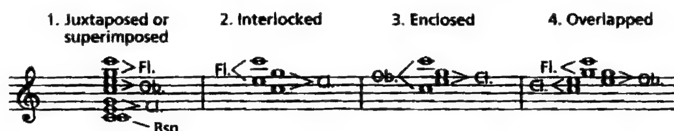
Before we look at a few examples from the literature, let us examine some of the more effective uses of doubling and spacing in a chordal texture. Even though homophonic wind writing in general, and doubling, spacing, and instrument selection in particular have been used by various composers in ways characteristic of their personal style, we can still extract from their pieces some norms to keep in mind.

Chords for Winds in Pairs

Chords for winds in pairs may be voiced in four ways:

EXAMPLE 8-18. Four Voicings for Chords for Winds in Pairs

CD-4/TR. 1

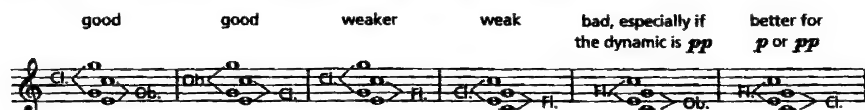


1. Juxtaposing or superimposing one woodwind pair over the other is probably the most frequently used voicing, but you must be sure that the most prominent melody note is in a good register for the instrument to which it has been assigned.

2. Interlocking the instrumental parts is a more imaginative voicing because it mixes the wind colors, but it must be used carefully because the pitches in some registers on some instruments will predominate over those on other instruments that lack a similar carrying power.

EXAMPLE 8-19. Chords with Interlocking Woodwind Pairs

CD-4/TR. 2



3. Enclosing one instrumental group within another may present similar problems to those that result from interlocking instrumental groups: namely, upsetting the timbral balance.

EXAMPLE 8-20. Chords with Enclosed Woodwind Pairs

CD-4/TR. 3



The third combination in Example 8-20 encloses the oboe within two different instrumental timbres. This not only gives better balance, since the clarinet is stronger on D^5 than the second flute, but also adds color.

4. Overlapping instrumental parts (doubling instruments at the unison) was in much greater use before the twentieth century than it is today; as we have seen, this technique obscures the timbral characteristics of both sets of instruments and often results in strengthening a pitch that does not necessarily need that kind of emphasis. In orchestral tutti sections this practice, of course, is still common.

Chords for Multiples of Winds

When multiples of three and four instruments are used, the same principles of juxtaposing, interlocking, enclosing, and overlapping should be followed. Assign pitches that are registrally and technically practical for each instrument so that the balance of the chord or the flow of the melody is not upset.

Chords in Which Each Note Has a Different Timbre

In most cases it is best to avoid using chords in which each note has a different timbre. Such chords are difficult to balance, and often are played out of tune. However, they work better when scored for single winds in a small orchestra, particularly if the chord is widely spaced, allowing each instrument to be placed in its most advantageous register. In Example 8-21, notice that the preferred spacing has the largest intervals between the bass and the next highest voice. It is customary to voice the higher woodwinds (the upper notes of the chord) in close position.

CD-4/TR. 4

EXAMPLE 8-21. Chords with a Single Woodwind on Each Pitch

difficult, and not very good — Fl. Cl. Ob. Bsn.; good — Fl. Ob. Cl. Bsn.; good — Fl. Ob. Cl. Bsn.

Spacing

Composers often treat the spacing of chord tones in a very personal way. Examples typical of Beethoven and other nineteenth-century composers, as well as Stravinsky, bear this out:

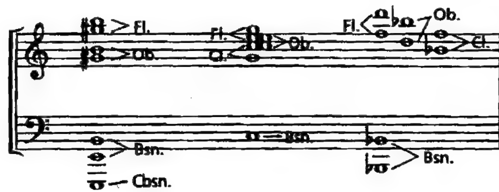
CD-4/TR. 5

EXAMPLE 8-22. Typical Spacing in a Beethoven Work

Fl. Ob. Cl. Bsn. — Fl. Ob. Cl. Bsn.

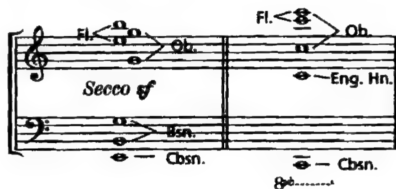
EXAMPLE 8-23. Spacing Found in Many Nineteenth-Century Works

CD-4/TR. 6



EXAMPLE 8-24. Two Stravinsky Spacings

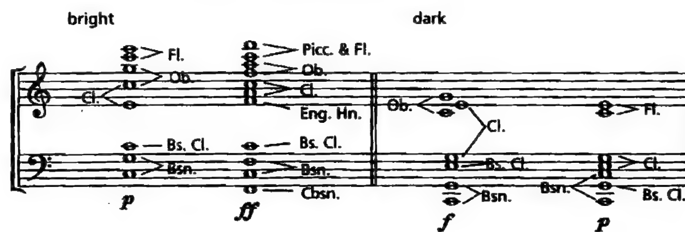
CD-4/TR. 7



Bright or dark hues result from a combination of instrumental choice and chord position:

EXAMPLE 8-25. Bright and Dark Colors

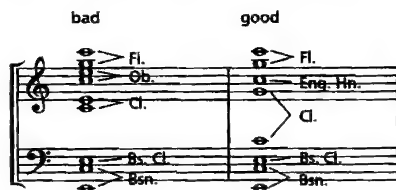
CD-4/TR. 8



The student orchestrator must give special consideration to spacing within first-inversion chords, particularly when the third (in the bass) is doubled by a lower (rather than an upper) chord member. This spacing will preserve the open sound of the first-inversion chord.

EXAMPLE 8-26. Spacing of First-Inversion Chords

CD-4/TR. 9



Representative Homophonic Passages

Now let us study three homophonic examples from orchestral literature.

Berlioz, *The Damnation of Faust*, "Will-o'-the-Wisps"

CD-4/TR. 10

EXAMPLE 8-27. Berlioz, *The Damnation of Faust*, "Minuet of the Will-o'-the-Wisps," mm. 125–140

131

Fl.

Picc.

Ob.

B♭ Cl.

B♭ Bs. Cl.

Vln. 1

Vln. 2

Vla.

Vlc.

136

Fl.

Picc.

Ob.

B♭ Cl.

B♭ Bs. Cl.

Bsn.

a 4

ff

Vln. 1

Vln. 2

Vla.

Vlc.

f

The fast passage from the "Will-o'-the-Wisp" movement, given above, features two piccolos and flute, doubled by the oboes, playing continuously against a marchlike rhythmic-harmonic background played by the two clarinets, bass clarinet, and strings.

Schumann, Symphony No. 2, Fourth Movement

More characteristic of homophonic writing for winds are these eight measures from Schumann's second symphony. The doubling of the oboe line at the octave by the solo viola and the bassoon line by the solo cello make a smooth transition to the introduction of the entire string section in measure 288. The color of the oboe and bassoon doubling will be retained for several measures after the G octave is reached in measure 291.

CD-4/TR. 11

EXAMPLE 8-28. Schumann, Symphony No. 2, fourth movement, mm. 272–291

W. Schuman, *New England Triptych,* Third Movement ("Chester")

The opening of this movement is an excellent example of a simple hymn setting in which the winds simulate an organ. Study Schuman's effective treatment of the doublings and voicing. The flute neutralizes some of the oboe's nasal quality, making the sound even more organlike. The mass of wind color that began the movement thins out at measure 13, when the bass clarinet enters, which provides a welcome change. If Schuman had introduced a cello or bass here, it would have detracted from the novelty of hearing a string sound in the new section starting at measure 18 (not recorded).

CD-4/TR. 12

EXAMPLE 8-29. W. Schuman, *New England Triptych*, third movement ("Chester"), mm. 1–17

Religioso (♩ = c. 84)

Fl. 1, 2
mf legato, dolce
Ob. 1
mf legato, dolce
Eng. Hn.
mf legato, dolce
B♭ Cl. 1
mf legato, dolce
B♭ Cl. 2
mf legato, dolce
Bsn. 1
mf legato, dolce
Bsn. 2
mf legato, dolce

7

Fl. 1, 2
Ob. 1
Eng. Hn.
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1
Bsn. 2

13

B♭ Cl. 1
Bs. Cl.
mf dolce
Solo
Bsn. 1
Solo
Bsn. 2

CONTRAPUNTAL WRITING FOR WINDS

Since the wind section was not predominant in orchestral pieces of the Baroque and Classical periods, not many examples of fugal or imitative composition written specifically for winds can be found in this repertoire. Of course, there are hundreds of examples of individual winds playing imitatively with strings or other wind instruments. In later periods, however, contrapuntal passages written specifically for winds are a feature of many large orchestral works.

Since each of the woodwinds has such a unique color, contrapuntal writing, particularly when coupled with strong rhythms, can be very effective. Here are three different examples of contrapuntal wind writing from the orchestral literature.

Mozart, Symphony No. 38, K. 504, Third Movement

The marvelous woodwind imitation heard in this passage provides harmonic stability for the first violins' melody and adds to its sunny nature.

EXAMPLE 8-30. Mozart, Symphony No. 38, K. 504, third movement, mm. 120–138

CD-4/TR. 13

Presto
120
Fl.
Ob.
p
Bsn.
p
F Hn.
Vln. 1
p
Vln. 2
pizz.
p
Vla.
pizz.
p
Vlc.
D.B.
pizz.
p

126
Fl.
Ob.
Bsn.
F Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
p
p
p
p
arco
arco
arco

132
Fl.
Ob.
Bsn.
F Hn.
E Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
f
f
f
f
f
f
f
f
f

Britten, *The Young Person's Guide to the Orchestra*, Fugue

Here is one of the few full-fledged fugal expositions written exclusively for woodwinds. Notice how it makes full use of the registral characteristics of each member of the choir. Listen carefully to the many examples of two like instruments playing in unison.

EXAMPLE 8-31. Britten, *The Young Person's Guide to the Orchestra*, Fugue, mm. 1–55

CD-4/TR. 14

Allegro molto

Picc.

Fl. 1, 2

Ob. 1, 2

B♭ Cl. 1, 2

30

Picc.

Fl. 1, 2

Ob. 1, 2

B♭ Cl. 1, 2

cresc.

cresc.

cresc.

35

Picc.

Fl. 1, 2

Ob. 1, 2

B♭ Cl. 1, 2

40

Picc.

Fl. 1, 2

Ob. 1, 2

B♭ Cl. 1, 2

Bsn. 1, 2

f pp

f pp

f pp

ff p

a 2

ff

45

Picc.

Fl. 1, 2

Ob. 1, 2

B♭ Cl. 1, 2

Bsn. 1, 2

cresc.

cresc.

cresc.

cresc.

(ff)

Stravinsky, *Le Sacre du printemps,* "L'Adoration de la terre"

Probably one of the most ingenious passages in all orchestral literature, this is counterpoint at its most sophisticated.

EXAMPLE 6-32. Stravinsky, *Le Sacre du printemps,* Part I, "L'Adoration de la terre," mm. 40–60

CD-4/TR. 15

44
Fl. 1
Alt. Fl.
Eng. Hn.
sim.
D Cl.
sim.
poco più f
A Cl. 1
mf
A Cl. 2
mf
Bsn. 1
sim.
mf
Bsn. 2
mf
Cbsn. 1
p
F Hn.
mp
D.B. solo
49
Fl. 1
Alt. Fl.
D Cl.
A Cl. 1
A Cl. 2
Bsn. 1
Bsn. 2
Cbsn. 1
Cbsn. 2
p
D.B. solo

52

Alt. Fl.

Ob. 1

Solo

mf *stacc.*

A Cl. 2 change to B♭ Cl. 2

A Cl. 2

54

Fl. 1

Fl. 2

Alt. Fl.

Ob. 1

stacc.

D Cl. 1

Solo

ff

B♭ Cl. 2

f

56

Fl. 1

Fl. 2

Alt. Fl.

Ob. 1

Eng. Hn.

Solo

D Cl.

Solo

sempre ff

A Cl. 1

très en dehors

B♭ Cl. 2

Cbsn. 1

mf

Cbsn. 2

mf

con sord. (arco)

Vlc. solo

6 D.B. soli

con sord.

pizz.

Practically every wind instrument has an entirely separate part at all times. It is as though we were listening to the sounds of nature on a spring night; the beautiful divided bass harmonics that begin in measure 57 add a mysterious texture to the whole. Nothing seems to have exact rhythm, yet every line is precisely notated in $\frac{2}{4}$ and $\frac{3}{4}$. The extreme rhythmic variation that is heard, however, imparts a magnificent freedom.

In spite of the many diverse parts, the music is crystal clear because Stravinsky has orchestrated each gesture in the best register of the instrument that plays it. For instance, the double tonguing of the piccolo at the beginning of

the excerpt sounds just right, as does the general mixing of three-against-two and four-against-six rhythms. Notice how the grace notes are divided, a typical Stravinsky device: in measure 40 the first clarinet plays the grace notes on the first note, the second clarinet on the third, the first again on the fifth note, and so forth. This technique makes the grace notes sound fresher since no one player is worn out by constantly repeating the same figure. Also, each player will necessarily articulate a bit differently, individualizing each grace note. Stravinsky uses this division of wind roles on many similar occasions, notably in *Petrushka*. Study the excerpt very carefully, for it contains some of the most thoughtful and colorful wind writing ever composed.

USING THE WIND CHOIR TO PROVIDE A CONTRASTING COLOR

One obvious use of the wind section is to provide contrasting color to the string section. This can be done in a number of ways. For instance, one section of the orchestra can alternate with another section, as in Example 8-33. In this example, each section actually melds into the other, the woodwind chord dissolving into the string chord (measure 236); at the very end, Brahms introduces the final chord in the string section and then colors it with the winds, whose slightly different voicing sustains the upper octave previously introduced in measure 235 by that section.

CD-4/TR. 16

EXAMPLE 8-33. Brahms, Symphony No. 2, third movement, mm. 233–240

Another example of an effective alternation of voices is found at the beginning of the first Trio in Schumann's Symphony No. 1. Here, a short gesture is initiated by the strings and then played by the winds and horns (two measures later the trumpets are added to this group). This gesture serves as a unifying element in the movement; when it is later played together by both choirs (measures 60 ff.), a sense of completeness or resolution results.

EXAMPLE 8-34. Schumann, Symphony No. 1, third movement, mm. 48–79 CD-4/TR. 17

60

Fl.
1.
p

Ob.
p

B♭ Cl.

Bsn.
p

D Hn.
p

D Tpt.
1.
p

Trb.
3.
cresc.

Timp.

Vln. 1
p

Vln. 2
p

Vla.
p

Vlc.
p

D.B.
cresc.

Following is a famous and clear example of antiphonal writing from the first movement of Beethoven's Symphony No. 3. Beethoven was very fond of assigning a motivic gesture to different members of the wind and string sections and then summing up the passage with a cadential tutti phrase. In Example 8-35, which starts with a *fortissimo* tutti after the opening exposition of the main idea, Beethoven provides instant contrast in measure 45 by "throwing around" a three-note motive; first played by the oboe, it is then repeated at different pitch levels by the clarinet, flute, and first violin. This entire exchange

begins anew in measure 49 and again in measure 53, but this third time the game is altered when the clarinet and bassoon follow in octaves, thereby introducing a summation gesture played by all winds and strings in octaves and unisons (the horns and trumpets provide the dominant–tonic root movement). As a general rule, (although there are exceptions), many of the great composers alter a musical idea, instrumentation, and so on, the *third* time they use it, even if very slightly; this altered repetition usually functions as a link to a new idea or section.

CD-4/TR. 18

EXAMPLE 8-35. Beethoven, Symphony No. 3, first movement, mm. 37–57

Allegro

Fl. / Ob. / B♭ Cl. / Bsn. / E♭ Hn. 1, 2 / E♭ Hn. 3 / E♭ Tpt. / Timp. / Vln. 1 / Vln. 2 / Vla. / Vlc. D.B.

44

Fl. — *p dolce*

Ob. — 1. *p dolce*

B♭ Cl. — 1. *p dolce*

Bsn.

E♭ Hn. 1, 2 — a 2 *p*

E♭ Hn. 3

E♭ Tpt.

Timp.

Vln. 1 — *p*

Vln. 2 — *p*

Vla. — *p*

Vlc. D.B. — *p*

51

Fl. — *ff* *p*

Ob. — *sf* a 2 *ff* *p*

B♭ Cl. — *sf* *ff* *p*

Bsn. — 1. *sf* *ff* *p*

E♭ Hn. — a 3 *ff* *p*

E♭ Tpt. — a 2 *ff* *p*

Vln. 1 — *p* *ff* *p*

Vln. 2 — *ff* *p*

Vla. — *ff* *p*

Vlc. D.B. — *ff* *p*

USING THE WIND CHOIR TO DOUBLE OTHER INSTRUMENTS OF THE ORCHESTRA

The woodwind choir is often called on to double the string choir, especially in tutti sections. In the eighteenth and nineteenth centuries, unison doublings of strings by winds were very popular. Today, octave doublings are used more frequently because, as we discovered earlier in this chapter, doublings at the unison detract from the clarity of a line by thickening the sound and muddying the upper partials of both instruments.

Even though the doubling within a passage may look as though it might be ineffective or unnecessary, the resulting timbre would be quite different without the doubling. Let us imagine what the following passage, from Berlioz's *Symphonie fantastique*, would sound like without the unison doubling, a solo flute with a solo violin. This rendition would have neither the warmth nor the richness of Berlioz's version, given in Example 8-36, especially in the upper reaches of the melodic line.

CD-4/TR. 19

EXAMPLE 8-36. Berlioz, *Symphonie fantastique*, third movement, mm. 20–37

An unusually beautiful doubling occurs at the beginning of the second movement of Brahms's Symphony No. 1. We have already experienced the effect of two bassoons doubling the bass line in the opening theme of Mozart's overture to *Le Nozze di Figaro*. Here we have a single bassoon doubling the opening theme of the first violins in octaves (Example 8-37). This doubling brings out the melody and gives it added warmth in an already rich harmonic setting.

EXAMPLE 8-37. Brahms, Symphony No. 1, second movement, mm. 1–6

CD-4/TR. 20

Examples of the entire wind section doubling the strings abound in nineteenth- and twentieth-century literature. In our first example, the first violins are doubled by the flutes and piccolo an octave higher; the violas by the oboes and clarinets an octave higher, filling out the upper-octave harmony; and the cellos by the bassoons at pitch as well as an octave higher.

CD-4/TR. 21

EXAMPLE 8-38. Dvořák, *Carnival Overture*, mm. 25–31

25 Presto

Picc.
Fl. 1, 2
Ob. 1, 2
A Cl. 1, 2
Bsn. 1, 2
E Hn. 1, 2
E Hn. 3, 4
E Tpt. 1, 2
Trb. 1, 2
Trb. 3 Tba.
Timp.
Cymb.
Tamb.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

f ff

Our second example starts with a dark coloring, and only as it ascends in pitch does it become more and more brilliant. Of course, the trick is to keep the volume of the brass down enough to let the strings and winds come through. This passage would sound more exuberant if the piccolo were used at the beginning and an octave higher, but that was obviously not the composer's intention, because it would mask the subdued feeling that is portrayed there.

EXAMPLE 8-39. Tchaikovsky, Symphony No. 6, first movement, mm. 237–244

CD-4/TR. 22

240

Fl. 1
Fl. 2
Picc.
Ob. 1, 2
A Cl. 1
A Cl. 2
2 Bsn.
F Hn. 1, 2
F Hn. 3, 4
B♭ Tpt.
Trb. 1, 2
Trb. 3
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

f cresc. ff mf

Our third example shows quiet doubling at its best and gives a complete summation of the two previous phrases, which were for strings alone and then winds alone. In Example 8-40 they come together for a third statement, preced-

ing the final coda. Notice the voicing, with the violas above the second violins in the first four measures. Since the second violins are so low, they need the doubling by the second clarinet and the muted horn. Notice also the way Copland orchestrates a diminuendo by cutting out the first oboe in the fifth measure (in this extremely low register it would sound too prominent) and substituting the quiet, rich sound of the second flute to finish the doubling of the violin. It is interesting that the horn, which doubles the second violin for four measures, then switches to playing in 3rds, thereby emphasizing concert pitch E, the third of the C-major chord just before [71]. This chord, without its dominant note (G), is a relative of the famous final chord of the *Symphony of Psalms*, but here it is very quiet, dark, and subdued, compared with its bright spacing in the Stravinsky work.

CD-4/TR. 23

EXAMPLE 8-40. Copland, *Appalachian Spring*, [70]–[71]

Moving forward
[70] a tempo
rit.
Fl. 1
Fl. 2
Ob.
B♭ Cl. 1
B♭ Cl. 2
Bsn. 1, 2
F Hn. 1, 2
1. con sord.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
mf sonore

NEW TYPES OF ARTICULATIONS FOR WOODWINDS

Two basic types of articulation are possible for woodwind instruments, slurred or tongued; tonguing may be single, double, or even triple. Tonguing can also be *hard* or *soft*, which produces different kinds of articulations where appropriate. Some modern composers have devised a number of novel articulation formulas, two of which we will examine here.

"Pulsating" Unisons

A long solo passage for flute and oboe, from the final movement of Debussy's *La Mer*, shows these two instruments in unison, but a unison that "pulsates": the oboe takes the sustained notes of the flute and divides them in half or in thirds, a process that makes the tune seem more animated than it would be if the oboe doubled the flute using the same rhythmic values.

EXAMPLE 8-41. Debussy, *La Mer*, third movement, mm. 157–170

CD-4/TR. 24

Reprenez peu à peu le Mouvt

161

Fl.
Ob.
Cl.
Hn. 1, 2
Hn. 3, 4
Hp. 1
Hp. 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

2.
pp
p
p
1.
pp
DO♮
SI♮
pp
pp
pp
pp

165

Fl.
Ob.
Cl.
Hn. 1, 2
Hn. 3, 4
Hp. 1
Hp. 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p più p pp

This technique draws attention to the difference between the tone qualities of the flute and oboe. As the two reach their lower register, the pulsating oboe line gains prominence over the more placid flute line.

Combining Articulations in the Same Melodic Line

In the short excerpt from the first movement of Stravinsky's *Symphony of Psalms*, the winds are divided so that one of them slurs a gesture while another one tongues the same gesture; compare, for instance, the second and fourth oboe lines, and the first, second, and third bassoon lines. The only lines that are entirely slurred are the sung melody, doubled by the first and third oboes, and the arpeggio figure in the English horn. The overall effect of this marvelous accompaniment is similar to that of violins being divided, the first violins playing *arco* and the second playing the same gesture pizzicato.

EXAMPLE 8-42. Stravinsky, *Symphony of Psalms*, first movement, mm. 26–36

CD-4/TR. 25

♩ = 92

26

Ob. 1, 2 — *mf* *p*
Ob. 3, 4 — *mf* *p*
Eng. Hn. — *p*
Bsn. 1 — *p*
Bsn. 2, 3 — *p*
A. — *mf cant.*

E - xau - di o - ra - ti - o - nem me - am, Do - mi - ne

32

Ob. 1, 2 — *mf*
Ob. 3, 4 — *mf*
Eng. Hn. — *mf*
Bsn. 1 — *mf*
Bsn. 2, 3 — *mf*
S. — *f cant.* Et de - pre - ca - ti - o - nem me - am.
A. — *f cant.* Et de - pre - ca - ti - o - nem me - am.
T. — *f cant.* Et de - pre - ca - ti - o - nem me - am.
B. — *f cant.* Et de - pre - ca - ti - o - nem me - am.
Vlc. — *mf cant.*

SPECIAL EFFECTS

Composers are constantly experimenting with new sounds and fresh approaches to all instruments, woodwinds in particular. Although hundreds of new uses have not found their way into the majority of newly composed orchestral pieces, you should still feel free to try any of them out. It is best, however, to consult with an experienced, professional orchestral musician about whether a desired effect will come off well in performance. In addition, clear instructions on how to create the effect should be given at the beginning of the work. Most problems that arise in contemporary scores stem from notation that is foreign to the performer and is not sufficiently clarified.

Very fine examples of new techniques for woodwinds abound. In the ingenious little trio for oboe, harp, and viola from his *Seven Studies on Themes of Paul Klee*, Gunther Schuller successfully uses a range of new techniques to simulate the sound of an Arab dance. Notice that specific instructions for the instruments are clearly given, an important addition to any score that requires unorthodox methods of sound production.

CD-4/TR. 26

EXAMPLE 8-43. G. Schuller, *Seven Studies on Themes of Paul Klee*, "Arab Village," mm. 60–73 (harp, solo viola, and cello not recorded)

Many excerpts from Polish scores show a variety of brand-new effects. In the following excerpts from Krzysztof Penderecki's *Dies irae*, winds first play the highest pitch they are able to produce, then they trill on specified notes until the end of the dark line with the arrow.

EXAMPLE 8-44. Penderecki, *Dies irae*, "Apocalypsis," mm. 2–4

CD-4/TR. 27

In his *Irisation for Orchestra,* Marek Stachowski asks the wind players to remove the mouthpieces and blow through them.

CD-4/TR. 28

EXAMPLE 8-45. Stachowski, *Irisation for Orchestra,* third movement, mm. 79–83

Solo and chamber music for woodwinds is generally more technically advanced than orchestral passages for these instruments. One reason is acoustical: since many contemporary woodwind effects are very soft, they come off more effectively in smaller, more intimate groups playing in smaller halls. In addition, usually only a few players are able (or in some cases willing) to perform these techniques. Some techniques are more successful when performed on certain makes of instruments; for example, some of the multiphonics mentioned in some texts published in Europe,* are extremely difficult to produce on American-made instruments. If a composer hears a certain sound in the inner ear and consults with an experienced professional, all things are possible.

*Such as B. Bartolozzi's *New Sounds for Woodwinds* (London: Oxford University Press, 1967).

TRANSCRIBING FROM PIANO TO WINDS AND STRINGS

Before you set out to transcribe or orchestrate a piece written by another composer, it is important to study carefully that composer's orchestration techniques as found in his or her other works—carefully noting preferences and even idiosyncracies—in order to maintain the composer's style in the new version. This is particularly true in the case of wind instruments. Which wind instruments does the composer favor? For what kinds of gestures does the composer use winds? What kinds of doublings are most characteristic? Answers to these questions can provide much insight into the individual sound of that composer.

Let us take two examples of transcriptions in which the material seems to call for a harmonic pedal. The first is of the beginning of the final movement of Mozart's Piano Sonata in A major, K. 331. Since it is marked "alla Turca" ("in the Turkish style"), we have used reed instruments for the sustained tonic and dominant pitches.

EXAMPLE 8-46. Mozart, Piano Sonata, K. 331, third movement, mm. 1–8

a. PIANO VERSION

Alla Turca
Allegretto

b. ORCHESTRAL VERSION

CD-4/TR. 29

Allegretto

2 Ob.
2 Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

div.
pizz.
pizz.

The second example is the first eight measures of a short piano piece by Robert Schumann. We have used winds in pairs. The sparse harmonic setting of the piano version has been filled out in the orchestral version by the addition of the pedal (easily played first by the clarinets and then by the bassoon) as well as by octave doubling and, after the double bar, by the addition of 3rds and other chord tones, all of which produce a lusher orchestral sound. Schumann's own orchestrations are usually quite heavy, with many octave doublings; therefore, our transcription is consistent with his style.

EXAMPLE 8-47. Schumann, "Melody," mm. 1–8

a. PIANO VERSION

Moderato

1

p

5

CD-4/TR. 30

b. ORCHESTRAL VERSION

Moderato

1

2 Fl.

1.

p

2 Ob.

1.

p

2 B♭ Cl.

pp

2 Bsn.

p

Can orchestration be taught? Of course it can, if you sharpen your ear by becoming familiar with the orchestral repertoire and carefully analyzing each interesting sound you hear, so that you can reproduce that sound in future orchestrations. Keep these factors in mind when we discuss orchestrating the brass and percussion sections, alone and in combination with the strings and winds, in Chapters 11 and 14, as well as scoring for full orchestra in Chapter 15.

FOR FURTHER STUDY

Flute, Piccolo:

Bizet, *Carmen*, Entr'acte before Act IV (flute and cello)
Debussy, *Ibéria*, first movement, mm. 309–329 (two piccolos)
Debussy, *Pelléas et Mélisande*, Act II, 3–7 mm. after 40 (flute)
Lutosławski, *Little Suite*, beginning (piccolo)
Ravel, *L'enfant et les sortilèges*, 1 m. after 50 to 51 (flute flutter tongue)
Ravel, Piano Concerto in G, first movement, beginning (piccolo); third movement, 4 mm. after 10 to 11 (low flute with bassoon)
Schoenberg, *Pierrot Lunaire*, "Der Mondfleck" (piccolo)
Shostakovich, Symphony No. 15, first movement, beginning (long flute solo with strings)
Wagner, *Tristan und Isolde*, Act II, beginning (flute solo)

Oboe, English Horn:

Bach, St. Matthew Passion, beginning (oboes doubled by flutes)
Barber, *The School for Scandal*, Overture (oboe melody at C, English horn at H)
Chou Wen-chung, *Landscapes*, 4–7 (oboe and English horn)
Honegger, Symphony No. 1, second movement, beginning (oboe, then English horn and flute)
Mozart, Piano Concerto, K. 467, third movement, mm. 78–118 (typical Classical use of oboe)
Piston, Symphony No. 2, first movement, 55–60 (1st oboe melody, 2nd oboe accompaniment)

Schoenberg, *Kammersymphonie*, Op. 9b, mm. 285–330
Shostakovich, Symphony No. 1, third movement, beginning to [1] and [9]–[10] (oboe)
Stravinsky, *Capriccio*, second movement, beginning (typical Stravinsky scoring for double reeds)
Tchaikovsky, Symphony No. 2, third movement, Trio (oboes in combination with clarinets, bassoons, horns, then violins)

Clarinet, Bass Clarinet, E♭ or D Clarinet:

Bartók, *Concerto for Orchestra*, fourth movement, [84]–[120] (trills, tremolos for three clarinets)
Copland, Symphony No. 3, fourth movement, from [112] to end (effective E♭ clarinet writing); study second and fourth movements for most effective all-around woodwind writing
Dvořák, Symphony No. 9 ("From the New World"), fourth movement, 2 mm. before [3] (long melody)
Mendelssohn, Violin Concerto, third movement, mm. 687–688 (clarinet echoes solo violin)
Sibelius, Symphony No. 1, first movement, beginning (long clarinet solo)
R. Strauss, *Ein Heldenleben*, 2 mm. before [34] to [35] (two clarinets, tremolo)
Stravinsky, *Oedipus Rex*, [100]–[107] (interesting three-clarinet passages)
Tchaikovsky, *Nutcracker* Suite, "Dance of the Sugarplum Fairy" (bass clarinet in low register)
Toch, *Chinese Flute*, "Confucius" (E♭ clarinet used like a trumpet)

Bassoon, Contrabassoon:

Beethoven, Symphony No. 9, last movement at *Andante maestoso* (two bassoons and contrabassoon)
Bizet, *L'Arlésienne* Suite No. 1, first movement, mm. 120–137 (bassoon triplets)
Brahms, Symphony No. 1, first movement, mm. 9–15; last movement, mm. 274–280 (large skips in bassoon)
Ravel, Piano Concerto for the Left Hand, first 8 mm. (contrabassoon solo)
Sibelius, Symphony No. 5, first movement, 2 mm. after [K] to [L] (long bassoon solo in the upper register)
R. Strauss, *Ein Heldenleben*, at [37] (three bassoons)
Tchaikovsky, Symphony No. 4, second movement, m. 275 (high register)

Saxophone:

Gershwin, *An American in Paris*, 9 mm. after [45] to [64] (alto, tenor, and baritone saxophones)
Milhaud, *La création du monde*, throughout (alto saxophone)
Petrassi, *Partita*, throughout (alto saxophone)
A. Read Thomas, *Sinfonia*, throughout (soprano saxophone)

Works with Very Large Woodwind Sections:

D. Asia, *Gateways* (winds in fours, including alto flute)
I. Barzelan, Symphony No. 6 (includes tenor recorder)
H. Brian, Symphony No. 2 (includes four piccolos, two English horns, and two bass clarinets)
Ravel, *Daphnis et Chloé* (Suites 1 and 2)
G. Schuller, *Farbenspiel* (= Concerto for Orchestra No. 3: two piccolos, two English horns, contrabass clarinet)
Stravinsky, *Le Sacre du printemps* (throughout)

9

Introduction to Brass Instruments

The brass section of the orchestra has great dynamic power, which we can hear in the following example.

EXAMPLE 9-1. R. Strauss, *Don Juan*, mm. 37–40

CD-3/TR. 31

Brass instruments were originally outdoor instruments, used for hunting, military functions, and the announcement of civil disasters. They were also heard in church, but, until the sixteenth century, only for occasions that demanded fanfares. These instruments were not widely employed in composed music until their unwieldy shapes and mechanisms were made more manageable, a process that took place largely in the nineteenth century.

The use of brass instruments within the modern symphony orchestra has been standardized only rather recently, and in some cases is still ongoing. For instance, in 1955 Walter Piston stated that trumpets in D "appear rarely" in the orchestra,* but since that date many trumpeters have taken up the instrument and it now appears frequently.

*Walter Piston, *Orchestration* (New York: W. W. Norton), p. 207.

It is imperative that you pay close attention to the evolution and development of this choir to understand more clearly how composers of the past wrote for it. In addition, with today's increased interest in the accurate performance of early music, we must be cognizant of issues concerning the use of brass instruments, particularly those played before 1650; these issues are no longer relevant today. We must be aware that the early brass instruments—especially trumpets and horns—had a different sound; players employed techniques and rules of intonation that were different from modern ones. The character and gestures of the music played by these instruments were dictated by a different set of constraints, which around the middle of the nineteenth century slowly began to resemble those that apply now.

Today, brass instruments suffer from few of the limitations that formerly frustrated their players, and brass players are among the most agile and versatile members of the modern orchestra. Composers are no longer hampered by any limitations of brass instruments, other than possibly range.

Since the full force of the brass section can easily overshadow the rest of the orchestra, the orchestrator must always find ways to balance the brass with the woodwind and string sections. Also, the brass section cannot be expected to play as softly as the strings and winds, although the *pianissimo* of a nonmuted brass section is a unique orchestral effect. We will discuss the question of balance at greater length in Chapter 11, where combinations of the orchestral choirs are explored.

COMPOSITION OF THE BRASS SECTION

The brass section of the modern symphony orchestra is usually made up of four horns, three trumpets, three trombones, and a tuba. Larger numbers of these instruments may be employed, and some composers augment this basic core of instruments with cornets, euphoniums, and Wagner tubas. In some early nineteenth-century scores we often find the outmoded ophicleide, whose parts are mostly performed on the tuba today.

The brass choir, which is more homogeneous than the woodwind section, is often divided into two groups:

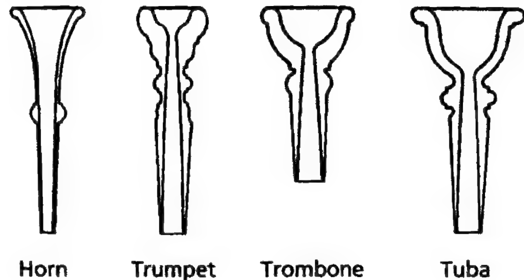
1. the horns;
2. the trumpets, trombones, and tubas.

This division reflects the different use the horns have from other brass instruments; in addition to being part of the brass choir they have been employed as adjuncts to the woodwind section because of their unique ability to blend with and strengthen the woodwind sound.

This division also reflects the shape of each instrument's mouthpiece: the funnel-shaped mouthpiece of the horn versus the cuplike, shallow mouthpieces of the trumpets, trombones, and tubas.

The different shapes and sizes of brass mouthpieces govern the timbre of the individual brass instruments. For instance, the trumpet's cuplike, shallow mouthpiece makes its tone much more brilliant than that of the horn, whose funnel-shaped mouthpiece makes its sound much more mellow. Forsyth has given us an excellent generalization to remember: "the shallower the cup, the more brilliant the tone."*

MOUTHPIECES ON MODERN BRASS INSTRUMENTS



Another but just as significant division reflects the way brass instruments are constructed. Today each brass instrument is made with a combination of cylindrical and conical tubing: trumpets and trombones mostly of cylindrical tubing and horns and tubas mostly of conical tubing.

We can also classify brass instruments in terms of transposition:

1. transposing—horns, trumpets, and cornets;
2. nontransposing—trombones, all tubas, and euphoniums.

BRASS INSTRUMENTS AND THE WRITTEN ORCHESTRAL SCORE

The arrangement of the brass choir on the orchestral page has some historic peculiarities. The brass instruments are placed right below the woodwinds on the score page in the following order:

four horns
three trumpets
three trombones
tuba

Notice that the horns, which are really the "altos" of the orchestral brass section, are placed above the trumpets. Most likely this is for historical reasons: either because the horns were regular members of the symphony orchestra before the trumpets, or because, in the Classical orchestra, trumpets were used in combination with timpani and the two were placed in proximity. In modern band scores this practice has often been changed so that the trumpets are placed above the horns. (See the score setups in Chapter 19.)

Horn and trumpet parts are usually written without key signatures. Brass parts in older scores were always written in the key of C, the instrument itself supplying pitches in the appropriate key. But in most orchestral scores even today it is common practice to notate horn and trumpet parts without key signatures and to mark all accidentals as they occur. Most orchestral performers prefer this manner of notation, although those playing band scores usually encounter parts with key signatures. Trombone and tuba players are used to reading key signatures, since their parts—particularly those from nineteenth-century scores—have always been notated that way.

*Cecil Forsyth, *Orchestration* (New York: Macmillan, 1949), p. 90.

The number of staves used per brass instrument is similar to the arrangement used for winds. For four horns, use two staves, with Horns 1 and 2 on the first, and Horns 3 and 4 on the second. We will discuss other, special ways to arrange four horns on a score page in the next chapter.

The three trumpets are also placed on two staves, with Trumpets 1 and 2 on the first and Trumpet 3 on the second. However, if the notation for the three trumpets is so complex that it cannot be clearly notated on two staves, use three staves, one for each trumpet. Follow this practice also for horns as needed.

The modern symphony orchestra usually has three trombones: two tenor trombones, whose parts are written on one staff, and a bass trombone, occupying a second staff. In some cases the bass trombone shares a staff with the tuba, but we discourage this practice, since it makes the parts harder to read.

In the orchestral brass section there is usually only one tuba, which has its own staff. When more tubas are called for, they are usually notated on the same staff. All euphoniums or Wagner tubas, however, are placed between the bass trombone staff and the tuba staff.

Overblowing and the Principle of the Harmonic Series

Up to the mid-nineteenth century trumpets and horns were not equipped with valves or pistons to play a variety of pitches, as they are today. Instead, the performer executed different pitches on these "natural" instruments by overblowing the fundamental tone of that instrument, which produced the upper partials of the fundamental's overtone series. Each natural brass instrument consisted of a hollow tube governed by a single fundamental pitch; the longer the tube, the lower the fundamental pitch of that brass instrument. By blowing comfortably through the tube (with an appropriate mouthpiece), the player produced the fundamental pitch of that tube; by overblowing the tube, the player produced the fundamental's overtones. An eight-foot-long tube, theoretically capable of sounding C^2 as its fundamental, produces the following series of tones:

EXAMPLE 9-2. Harmonic Series on C

The skilled player of a natural brass instrument can isolate each of these pitches, or partials, by embouchure manipulation and breath control. The player must have a mental concept of what the pitch sounds like as well as how it feels in order to execute that pitch clearly.

Performers encounter the following constraints when playing natural brass instruments (again, those without valves or pistons to change pitches):

1. The pitches that can be sounded are entirely dependent on the length of the instrument's tube, which determines its inherent fundamental tone and the harmonic series built from that tone. For example, on an instrument

whose fundamental tone is C^2—as in Example 9-2 above—under normal circumstances the performer could not play any of the following notes or any chromatic alterations of them:*

EXAMPLE 9-3. Unplayable Notes with C^2 Fundamental



2. For beginners, the fundamental, called the *pedal tone* (see p. 303), is usually difficult to produce.
3. Although all pitches up to the twenty-first partial in the harmonic series are theoretically producible on a brass instrument, most players cannot produce pitches above the sixteenth partial.
4. When executed on natural instruments, certain partials—particularly the seventh, eleventh, thirteenth, and fourteenth—are out of tune compared with the corresponding pitches of our present tempered scale. In addition, the two major seconds between partials eight and nine, and nine and ten are intervals of unequal length and need to be adjusted when played. Today, some composers want this out-of-tune sound as a special effect. For instance, for his *Serenade* Benjamin Britten specifies that the following passage be played on an "open" horn, which produces many out-of-tune pitches (indicated by the x's in the example). To play this passage on a modern horn but as Britten intended, the performer should play the series on F without manipulating the pitches by means of the valves.

EXAMPLE 9-4. Britten, *Serenade*, Prologue, mm. 1–14

CD-3/TR. 32

Bach, Handel, Vivaldi, Telemann, and their contemporaries were daring and demanding in their brass writing, and the virtuosos of their day made the upper range their specialty. When a trumpet player found certain notes out of tune or "missing" from the harmonic series that governed the instrument, he or she corrected or "found" these notes by varying the embouchure. For instance,

*As we shall see later in this chapter and in Chapter 10, skilled performers overcame this problem in certain ways, but in doing so they sacrificed good intonation and tone quality.

in the following passage, written for F trumpet (transposing a perfect 4th up), players most likely had difficulty with two pitches, F^5 and A^5 (denoted with a ^{v} underneath the score), which they needed to alter while maintaining the rapid tempo:

CD-3/TR. 33

EXAMPLE 9-5. Bach, *Brandenburg* Concerto No. 2, first movement, mm. 28–30

F Tpt.

12 14v 15 14v 15 16 15 14v 16 8 9 10 11v 12 10 14v 11v 9 11v 6 9 12 11v 10 11v 12 10 8

The player likely lowered the F^5 (the eleventh partial) by manipulating the embouchure, and played the A^5, normally badly out of tune, by using the fourteenth partial but flattening it substantially. The horn player, in addition to manipulating the embouchure, could also shorten the tube and thereby raise the pitch by placing the right hand into the bell of the instrument.

Classical composers seldom asked for notes higher than the twelfth partial. In the following two representative examples, the player needs to adjust the eleventh partial on a natural brass instrument:

CD-3/TR. 34
INDEX 1 / 0:00

EXAMPLE 9-6. Mozart, Symphony No. 40, third movement, mm. 74–78

G Hn.

5 6 8 10 12 11v 10
4 5 6 8 10 9 8

CD-3/TR. 34
INDEX 2 / 0:12

EXAMPLE 9-7. Beethoven, Piano Concerto No. 5, first movement, mm. 43–47

E♭ Hn.

9 10 9 8 9 10 9 10 9 10 9 10 11v
6 8 6 5 6 8 6 8 6 8 6 8 9

By Beethoven's time the range of natural brass instruments had expanded upward; in the following example the E♭ horns play pitches up to the sixteenth partial (C^6). The B^5 in Horn 1 and D^5 in Horn 3 will need slight adjustments, which are easy to execute in this very high register.

CD-3/TR. 35

EXAMPLE 9-8. Beethoven, Symphony No. 3, third movement, mm. 174–181

E♭ Hn. 1, 2

E♭ Hn. 3

CROOKS, VALVES, AND SLIDES

The Introduction of Crooks and Valves on Trumpets and Horns

By the time of Haydn, a mechanism had been invented that allowed trumpets and horns to play notes outside a single harmonic series. We know that the pitch of the fundamental depends on the length of the tube; it was found that by adding extra tubing, a player could produce another harmonic series on the same instrument. This added pipe, called a *crook*, was U-shaped and inserted at certain points along the length of the original tube.

The composer could decide which series to start the piece in, and the player, given a little time, could change the series anywhere in the piece and perform in another key by inserting the appropriate crook for that key (see Chapter 10, pp. 314 and 328, for a list of the most important crooks used at the time). Of course, the player was still limited to the notes in the harmonic series governed by the new length of tubing.

During the eighteenth century, both trumpets and horns remained transposing instruments, since it was much easier for the performer to read music in C and let the particular transposition of the instrument (and the crook used) take care of transposing the passage to the required key. The following example shows how "horn 5ths" sound, depending on which natural instrument plays them (see also Example 15-13):

EXAMPLE 9-9. Horn 5ths

Written

Sounds: F Hn.

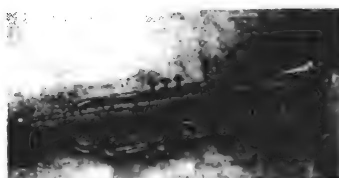
Sounds: E♭ Hn.

Sounds: G Hn.

The next improvement, early in the nineteenth century, concerned the invention of valves (both rotary and piston), but it was not until the middle of that century that the system of valves was refined enough to gain acceptance by performers.

The valve system functions in this manner: three coiled tubes are permanently attached to the main tube inside the main loop. Each of the attached coils can be activated, or joined, to the main stream of air by a valve easily operable by the performer's left hand. Pressing the piston or lever opens up the extra tubing and thereby accomplishes instantly what the changing of crooks did previously.

Usually there are three valves on the trumpet and horn. The first is closest to the player, the second is in the middle, and the third is farthest away from the player. Depressing only the first valve lowers a particular pitch of the harmonic series a whole step. Depressing only the second lowers it a semitone. Depressing only the third lowers it a tone and a half. Tubas often have a fourth valve that lowers the



THE COILED TUBES ON A MODERN TRUMPET



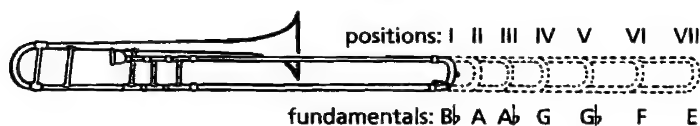
THE COILED TUBES ON A MODERN HORN

pitch a perfect 4th. In addition, two or more valves may be depressed at the same time. When a player depresses more than one valve, the actions described above are combined; for instance, depressing valves 2 and 3 lowers the pitch a major 3rd. The valve system has enabled these brass instruments to play passages that are completely chromatic.

The Use of the Slide on Trombones

The fifteenth-century trombone closely resembles its modern counterpart in the manner in which it is constructed and played. Both instruments are made of two U-shaped pieces of tubing, one of which slides into the other. The player changes pitches by sliding the two pieces together or apart. This slide mechanism enables the trombonist to change the total length of the tube with precision and produce perfect intonation, as well as produce pitches that are completely chromatic. He or she still controls the notes of the overtone series by means of embouchure manipulation.

The tenor trombone has seven positions of the slide, each of which produces its own fundamental pitch:



POSITIONS OF THE TROMBONE SLIDE

Each of the resulting seven fundamentals carries its own harmonic series. With practice the player can change position—which changes the fundamental—almost instantaneously. The following chart shows how the various combinations of valves on the trumpet and horn correspond to the seven trombone positions:

COMPARING TRUMPET AND HORN VALVES WITH TROMBONE POSITIONS

Trumpet/Horn, Valves Depressed	*Trombone Slide Position*	*Interval by Which Pitch Is Lowered*
None	first	none
No. 2	second	semitone
No. 1	third	whole tone
No. 3, or nos. 1 and 2	fourth	minor third
Nos. 2 and 3	fifth	major third
Nos. 1 and 3	sixth	perfect fourth
Nos. 1, 2, and 3	seventh	augmented fourth

Fine Tuning

Each modern brass instrument has a tuning slide as part of its mechanism, which allows slight pitch adjustments as necessary. Pulling the tuning slide out will add tubing to the instrument and lower the pitch slightly; pushing the slide in will shorten the tube and raise the pitch slightly. If greater pitch discrepancies need to be fixed, the valve slide as well as the tuning slide may have to be adjusted.

RANGE

The range of each brass instrument depends on the length of its tubing as well as the width of its bore. Generally speaking, the wider the bore, the easier it is to produce lower notes or partials on the instrument; conversely, the narrower the bore, the easier it is to produce higher partials.

The fundamental tones on each brass instrument are called *pedal tones*. Most modern brass instruments have several such tones, each corresponding to a fundamental pitch. For instance, since there are seven playing positions on the trombone, each governed by a different fundamental, there are seven pedal tones. On the trumpet and horn, each of the several pedal tones corresponds to a particular valve or set of valves depressed at any given time. Pedal tones are more difficult to play on brass instruments than the upper partials, and are most commonly written for the trombone and horn in modern symphonic and solo literature. Recently, however, composers have been borrowing the use of pedal tones on the trumpet from jazz and writing them into their orchestral scores.

The full range for each brass instrument will be given in Chapter 10.

TONE PRODUCTION, ARTICULATION, AND TONGUING

Just as woodwind players use their reeds as a source of vibration, so do brass players use their lips. In both sets of instruments the vibrating column of air is then amplified and channeled through the instrument. Generally, the

embouchure on brass instruments is as follows: the player keeps the lips loose for low notes and tightens them as he or she moves up into the higher registers.

Tonguing on brass instruments is similar to tonguing on wind instruments. All types of tonguing can be executed, with single, double, and triple tonguing being the most feasible. A great variety of attacks is possible on all brass instruments, although the particular constraints of each brass instrument make certain attacks and articulations problematic, especially on extremely low notes that require a loose embouchure. Conversely, in the extremely high register, soft attacks and controlled articulations are quite difficult to execute because of the required firmness of lips and velocity of breath required to produce these effects. In Chapter 10 we will discuss those techniques available to each instrument in turn.

Breathing and Phrasing

Brass instruments require a great deal more wind than woodwinds do. Because playing these instruments is rather taxing, the composer or orchestrator should allow frequent intervals of rest so that the players can catch their breath and their lips can recuperate.

Phrasing is very much like that for woodwinds. All slurred phrases are performed in one breath. If a passage is not slurred in the score it will be tongued by the player, each note articulated separately. In a loud passage in a slow tempo, you should not phrase too many notes in one breath, since it takes more wind to play loudly than softly.

COMMON CHARACTERISTICS AND EFFECTS ON ALL BRASS INSTRUMENTS

Attacks and Tonguing

Sforzando and the *Forte-piano* Attack

Brass instruments can execute *sforzando* attacks better than any other instruments of the orchestra:

CD-3/TR. 36

EXAMPLE 9-10. *Sforzando*

Light, Soft, Fast Tonguing

This effect can be accomplished so that it sounds very delicate and not brassy.

EXAMPLE 9-11. Debussy, *Jeux*, 7 mm. after [35]

CD-3/TR. 37

Double Tonguing

Double tonguing is executed using the syllables "tuh-kuh" or "teh-keh."

EXAMPLE 9-12. Ravel, *Rapsodie espagnole*, "Feria," at [6]

CD-3/TR. 38

Triple Tonguing

Triple tonguing is executed using the syllables "tuh-kuh-tuh" or "tuh-tuh-kuh" ("teh-keh-teh" or "teh-teh-keh").

EXAMPLE 9-13. Rimsky-Korsakov, *Sheherazade*, third movement, at [G]

CD-3/TR. 39

Flutter Tonguing

Flutter tonguing is very effective and easy to produce on all brass instruments. In the following example, notice that the notation is similar to that indicating flutter tonguing for woodwinds (see Example 7-16).

CD-3/TR. 40

EXAMPLE 9-14. R. Strauss, *Don Quixote*, Variation II, mm. 18–19

Fast
all muted 18
F Hn. 1 2 3 4 5 6
D Tpt. 1 2 3
Trb. 1 2 3
mf *cresc.*

Glissandi

Horn and trumpet players can produce a glissando by using a *lip slur*. With normal lip pressure, this lip glissando will result in a high-speed rendering of that portion of the harmonic series that falls between the beginning and ending pitches played. However, many performers today are able to play a smooth chromatic glissando by using either more or less lip pressure, depending on the direction of the glissando.

Lip slurs are most effective in the upper register, where the partials are close together; they are also much easier to play by slurring up than down, although jazz trumpeters execute amazing glissandi (called "rips") in both directions. (Listen to the excerpts in Chapter 11 in the sections titled "Jazz Effects" and "New Techniques" for examples of jazz glissandi.) Both trumpet and horn glissandi are sweeping gestures that sound exciting and not musically vulgar. Because the trombone is able to play glissandi in both directions with relative ease, it has been too often called on to show off this effect. Yet glissandi that are appropriately used on this instrument are very effective and do not sound overdone. The tuba is also able to perform glissandi but not so easily; glissandi for tubas should be written upward, as they are slightly easier to play than downward glissandi.

EXAMPLE 9-15. Brass Glissandi

CD-3/TR. 41

4 F Hn.
3 B♭ Tpt.
3 Trb. Tba.
gliss.
ff

Trills and Tremolos

Most brass instruments can perform some tremolos successfully; all are able to play trills. On some instruments lip trills are preferable; on others the pistons or valves are used. Some players combine both techniques, although obviously a trombone player can use only lip trills (sometimes also called lip slurs). Since each brass instrument executes these effects differently, we will examine trills and tremolos on each brass instrument in the next chapter.

MUTES

All brass instruments can be muted. Muting can create a *pianissimo* that is incredibly soft; however, mutes do not simply make the instrument softer, they also change the character or color of the sound. In fact, hearing *fortissimo* muted passages played by the entire brass section can be a dynamic experience, and the effect has been used quite often in music written during the last hundred years.

EXAMPLE 9-16. Vaughan Williams, Symphony No. 6, fourth movement, mm. 39–42

CD-3/TR. 42

39
con sord.
F Hn. 1 2, 3 4
B♭ Tpt. 1, 2 3
Trb. 1 2, 3
pp

A brass mute is a cone-shaped plug that is inserted into the bell of the instrument. On its sides are small blocks of cork, which prevent the mute from fitting too tightly against the sides of the bell and make it easy to insert and remove. There are a variety of mutes for the trumpet and trombone, but only one that is practical for the horn and one for the tuba. Euphoniums and Wagner tubas also have mutes.

CD-ROM
CD-3
HAND-STOPPED
HORN

The horn player can achieve a muted effect by hand stopping, that is, pushing the hand tightly into the bell. Doing so, however, raises the pitch, and the horn player needs to compensate by adjusting the hand in the bell or fingering the note a half step lower. The commercial horn mute, however, corrects the alteration in pitch that would be caused by hand muting, so that the player can perform the printed pitch.

Trumpet players usually carry several mutes with them, whereas trombonists seldom have but one mute along, since the larger size of trombone mutes makes them cumbersome to transport. If a trombonist does carry a mute most likely it will be a straight one.

The different kinds of mutes available for trumpets and trombones are illustrated below. In orchestral music the straight mute is most often used. For all mutes and muting devices other than the straight mute, the composer or orchestrator must specify the exact name of the mute in the score and parts and give any special instructions for using it.

CD-ROM
CD-3
MUTED
TROMBONE

Straight Mute

Both trumpet and trombone players use this mute automatically when *con sordino* is indicated in a work. A performer can play either softly or loudly with this mute. It is made of either fiberboard or metal. The fiber mute does not have as much cutting edge as the very poignant-sounding metal mute, especially in *fortissimo* passages.



STRAIGHT MUTE

CD-ROM
CD-3
CUP MUTE

Cup Mute

Not commonly used in symphony orchestras, this mute is more associated with jazz bands. The cup is adjusted to suit the style of the piece performed. For instance, when the whole section plays, the cup is usually open about an inch; in solo work or amplified playing, the cup is closed almost against the bell to produce a dark, muffled tone. The cup mute can also produce colorless, ghostlike, nasal sounds.



CUP MUTE

Harmon or Wa-Wa Mute

CD-ROM
CD-3
HARMON MUTE

This mute is made out of metal and comes in two parts, the mute itself and the "cookie cutter" stem. This stem can be adjusted to produce a variety of sounds or change the tone: by removing the stem from the mute, extending the stem either halfway or all the way, or using the right hand to open and close the opening of the mute with the stem to obtain the "wa-wa" effect. In notation, the "+" means closing the hand and the "o" sign means opening it.



HARMON MUTE WITH STEM (LEFT) AND WITHOUT STEM (RIGHT)

The sound of a trumpet with a fully assembled harmon mute is penetrating and shimmering. The harmon mute is seldom used in the symphony orchestra except for comical effects, such as in Lucien Cailliet's arrangement of *Pop Goes the Weasel* or the "wa-wa" jazz effects in Gershwin's *Rhapsody in Blue*. This mute sounds much duller when inserted into a trombone bell.

Whispa Mute

This is the softest of all the mutes and makes the instrument sound as if it were played somewhere offstage. If the instrument is played very softly, it produces almost inaudible sounds.

The whispa mute is made like the harmon mute and works on the same principle. The sound is forced through a chamber filled with sound-absorbent material, and small holes allow only a little bit of sound to escape. It takes more effort to play the instrument with this mute, and extremely high notes are very difficult to produce.



WHISPA MUTE

Solotone Mute

CD-ROM
CD-3
SOLOTONE MUTE

This mute also works like a harmon mute, with all the air passing through the device and none escaping along the sides. The tone is diminished and then reinforced in the first chamber, and leaves that chamber through a cardboard tube permanently mounted within. The tone is centered and well focused by a megaphone-shaped cone as it leaves the tube, and has a nasal character, as if it were coming through an old-fashioned radio or telephone. Ferde Grofé asks for this mute in his arrangement for small orchestra of the "On the Trail" movement (trombone solo) from his *Grand Canyon Suite*.



SOLOTONE MUTE

CD-ROM
CD-3
BUCKET MUTE

Bucket Mute

The bucket mute, sometimes called the velvetone mute, is constucted in such a way that it completely blocks most of the sound, letting only a small amount of air pass around its edges. This makes not only a soft tone but also a very mellow one.



BUCKET MUTE

MUTING DEVICES OTHER THAN MUTES

Plunger

This six-inch rubber bowl with a small handle muffles the sound. A player can produce popping sounds by holding the mute very close to the bell and playing very fast notes.



PLUNGER

Hat or Derby

This device is usually used in jazz bands but in any style of music it effectively reduces the intensity of the trumpet or trombone without distorting the sound.

Putting the Hand over the Bell or in the Bell

This procedure dampens the trumpet or trombone's sound but is not as effective as using mutes. It will produce pitch variation, and the composer or orchestrator specifying this procedure must be aware of this. If desired, this procedure can produce simultaneous pitch variations and muting.

Playing into the Stand

Often called for in jazz playing, this technique can reduce the loudness and brilliance of both the trumpet and the trombone. The player places the bell of the instrument about two inches from the stand, thereby lowering the dynamic level.

Inserting a Cloth or Handkerchief in the Bell

Charles Ives used this procedure effectively for the trumpet in *The Unanswered Question*. A few modern composers have also asked for it. It reduces the volume

and brilliance of the sound without causing any change in pitch and leaves the player in perfect control of the instrument, not having to strain for either high or low notes.

ADDITIONAL PASSAGES FOR STUDY

Berg, *Lulu* Suite, 2 mm. before [690]–[700] (muted brass beginning softly and making a crescendo to *fortissimo*)
Copland, *Lincoln Portrait*, [200]–[201] (*mezzo forte* muted brass)

10

INDIVIDUAL BRASS INSTRUMENTS

HORN

Corno (It.), Cor (Fr.)



VERNE REYNOLDS, HORN

It is a mystery why the term *French horn* has persisted for this instrument in England and America, since most of the developments concerning its construction occurred in Germany. A possible explanation could be that in the earliest orchestral uses of the instrument (around 1710), especially in Germany and England, horn parts were often marked with the French designation *cor de chasse* (hunting horn); Bach, however, usually used the equivalent Italian term *corno da caccia*. In this book we will refer to the instrument simply as "horn."

The unique status of the horn is apparent in its many different functions within ensembles. In chamber music composers have treated the horn sometimes as a woodwind instrument, other times as a brass instrument; witness its role as a member of both the woodwind quintet and the brass quintet. In orchestral music its distinctive timbre has been called on to symbolize such disparate notions as cuckoldry, in eighteenth-century Mozartian opera, and heroism, in nineteenth-century symphonic music.

The horn has as much agility as any other brass instrument, and is an excellent solo instrument as well as a successful doubler. Even though the horn has a mellower sound than the trumpet, it possesses enough brilliance and carrying power in loud passages to be heard over almost any combination of instruments. But because of its velvetlike tone quality, especially in the middle register, the horn choir makes a wonderful accompaniment for any solo instrument.

There are two distinct kinds of horns:

1. the natural horn, sometimes called the hand horn (*corno naturale,* [It.]; *cor simple* [Fr.]; *Waldhorn* [Ger.]);

2. the valve horn, which is used in most orchestras today (*corno ventile* [It.]; *cor à pistons* [Fr.]; *Ventilhorn* [Ger.]).

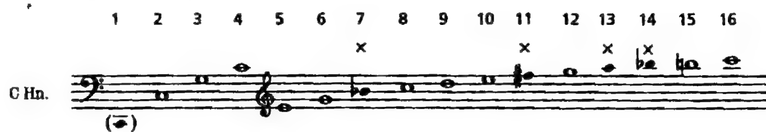
The Natural Horn

The natural horn is constructed from a coil of brass tubing a quarter inch in diameter at the opening where the mouthpiece is inserted, and expanding to about three inches at the throat of the bell. The bell then flares until it is about eleven inches in diameter.

Range

The basic natural horn was an eight-foot-long tube with the fundamental pitch C.

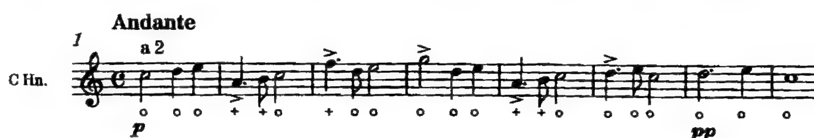
EXAMPLE 10-1. Range of the Natural Horn



Most Classical composers seldom asked the horn player to produce any pitch above the twelfth partial. From Beethoven on, however, partials up to the sixteenth were commonly used. Later composers such as Brahms and Wagner, who had access to valve horns, continued to score for the natural horn, frequently drawing on the higher partials.

The fundamental on the natural horn was usually not playable, so the performer had eleven good notes out of the possible sixteen partials. These notes are shown in Example 10-1 as whole notes. The notes with x's over them were very badly out of tune and had to be adjusted by inserting the hand in the bell if they were flat or by loosening the embouchure if they were sharp. The term *hand horn* reflects the performer's proficiency in correcting flat partials by raising the pitches with the hand in the bell or even producing some pitches not part of the series. Combining right-hand manipulation with skillful embouchure control, the horn player could successfully perform passages such as the following from Schubert's C-major Symphony. All notes stopped with the hand are designated by "+," unstopped notes by "o":

EXAMPLE 10-2. Schubert, Symphony No. 9, first movement, mm. 1–8



The difference in sound between stopped and unstopped notes is quite noticeable, since inserting the right hand into the bell also mutes the instrument and subsequently changes the sound's tone color.

Transposition

It was the practice to use various crooks to change the fundamental and with it its entire harmonic series. Each crook produced a horn in a different transposition. These crooks were either fitted to the end of the tube near the horn's mouthpiece, or in later years were slid into the tubing where the tuning slide was usually placed. The following crooks were the most popular during the eighteenth century and the early part of the nineteenth century:

Horn in	*Sounding (Transposition)*
C *alto*	sounds as written
B♭ *alto*	a major 2nd lower than notated
A	a minor 3rd lower than notated
A♭	a major 3rd lower than notated
G	a perfect 4th lower than notated
F	a perfect 5th lower than notated
E	a minor 6th lower than notated
E♭	a major 6th lower than notated
D	a minor 7th lower than notated
C *basso*	an octave lower than notated
B♭ *basso*	a major 9th lower than notated
A *basso*	an octave and a minor 3rd lower than notated

Notice that all natural horns except the C alto transpose downward.

The words *alto* and *basso* describe specific crooks. Here, *alto* means high and *basso* low, adding an octave to the regular (alto) transposition of the horn. If the word *basso* does not appear in the score, then the player uses the alto transposition of the instrument.

In addition to the crooks in the table above, others were less frequently used, such as G basso and even B basso (Brahms, Symphony No. 1). Some rare transpositions using alto crooks can be found in Haydn's "Farewell" Symphony (F♯), Massenet's *Phædre* (D♭), and Bizet's *Carmen* (D♭).

Divided Horns

Since the beginning of orchestral horn playing it has been the practice to divide natural horns into firsts and seconds. This separation allows one player (the first, or *cor alto*) to play "high horn" and the other (the second, or *cor basso*) to play "low horn." Toward the latter part of the eighteenth century the range of each of these horn parts was fairly established:

EXAMPLE 10-3. Differences in Range of the *Cor Basso* and *Cor Alto*



Lower horn players often used a larger mouthpiece to facilitate the playing of the lower notes, and by loosening the embouchure were even able to play the pedal notes G^2 and C^2. Since natural horns are still used in some European orchestras, such as the Philharmonic orchestras of Vienna and Berlin, horn players

will use the larger mouthpiece and train their embouchure to bend pitches downward for those pieces, such as Haydn's early Symphony in G major, that call for this.

The leading horn players of the late eighteenth and early nineteenth centuries favored the F crook's brighter tone, particularly when compared with the more sombre and darker timbre of the E♭ and D crooks. This practice most likely led to the adoption, later in the nineteenth century, of the basic valve horn in F, which was the prototype of the first completely chromatic instrument.

The Valve Horn

CD-ROM
CD-3
HORN

For a period of roughly fifty years the natural horn and the valve horn coexisted. Composers and performers may have continued to use the natural horn because they distrusted the new instrument's mechanism, or perhaps because they preferred the outdoor, "hunting" quality of the natural horn. But by the beginning of the twentieth century, most likely in response to the chromatic complexities of the music from Wagner on, the valve horn became the standard instrument in symphony orchestras. Beautiful horn passages, especially by Brahms and Bruckner, continued to be written for natural or hand horn, but many of these actually sound better and are more accurately in tune when played on the valve horn.

Construction

The valve horn has three rotary valves, manipulated by the index, middle, and ring fingers of the player's left hand, which activate the coiled tubes inside the main loop of tubing. These valves, with the two sets of main tubing described below, render the modern horn completely chromatic.

Our modern instrument is basically an F valve horn. But to it an even greater improvement has been made: that of adding another set of coiled tubing to create what we call a *double horn*. The main set of tubing on this instrument, that of the F horn, is approximately twelve feet long. The additional set, that of the B♭ alto horn (also called the *B♭ division*), is approximately nine feet long and activated by a trigger worked by the left thumb that cuts off three feet of the F horn's tubing.

The double horn is clearly a practical solution to the demands of composers who write higher and higher pitches, which are much easier to produce on the B♭ alto, with its shorter length of tubing. (On the B♭ horn the *twelfth* partial is the same pitch as the *sixteenth* partial on the F horn.) When writing for double horn the composer or orchestrator simply notates for F horn; the performer will choose whether to play on the F or B♭ division.

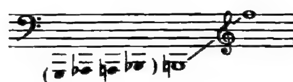
Range and Registral Characteristics

EXAMPLE 10-4. Range of the Valve Horn in F

Written:



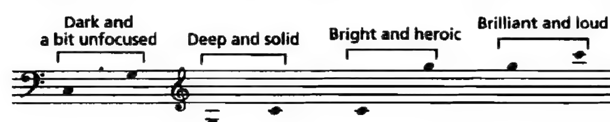
Sounding:



The modern horn has a very large range, but certain notes are difficult to produce on it. For instance, pitches in the lower register, especially the infrequently used pedal tones of the B♭ division that are accessed from F♯2 down (shown as unstemmed quarter notes in Example 10-4),* are hard to control because the embouchure needs to be very loose to play them. These pitches are most effective when sustained or used in slow-moving passages; they should be avoided in fast passages because they speak more slowly. In addition, it is taxing to play in the higher register all the time, so periodic rests should be written into the part if the high register is used continuously.

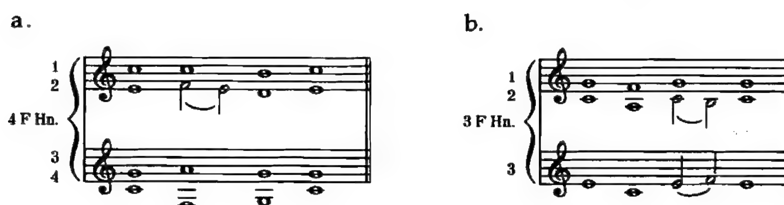
The rest of the range can be played with agility, but because the horn player must hear each note mentally and then find it with the embouchure, he or she will experience difficulty in executing wide leaps or excessively fast and jagged runs.

EXAMPLE 10-5. Registral Characteristics: Valve Horn in F (Written Pitches)



Today, of the four horns of the orchestral section, Horns 1 and 3 are assigned the higher parts and Horns 2 and 4 the lower parts. This pairing has a historical origin: when four horns were first introduced into the orchestra, Horns 1 and 2 (a high and a low horn, respectively) were in a different key from Horns 3 and 4 (another high and low horn). The tradition of scoring for two separate pairings of high and low horns has endured, even though most performers today play the modern (chromatic) horn and therefore play in the same transposition. The appearance of the four horns in the score reflects this tradition:

EXAMPLE 10-6. Layout of Modern Horn Section on a Score Page



In Example 10-6a, notice that Horns 1 and 2, a "high" and a "low" horn, share the same staff; the same goes for Horns 3 and 4. Notice also that the second and third horn parts interlock. When only three horn parts are written, as in Example 10-6b, Horn 3 (traditionally a high horn) is usually placed above Horn 2. In some modern scores composers have switched this arrangement around and have written both high horns (Horns 1 and 3) on one staff and both low horns (Horns 2 and 4) on another directly below.

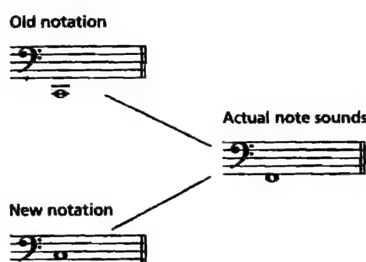
*Pedal tones of the F division are not used.

Old and New Notation

In all newly published scores and new editions of older scores, the F horn part always transposes down a perfect 5th, whether it is notated in the treble clef or, less frequently, the bass clef. In many nineteenth-century scores, however, you may encounter lower horn parts that transpose up a perfect 4th; these parts will always be written in the bass clef (in these scores all parts notated in the treble clef transpose a perfect 5th down). The difference between the old and new transpositions for horn parts written in the bass clef, therefore, is as follows:

EXAMPLE 10-7. Old versus New Transpositions

It is important to be aware of this discrepancy; you may find some horn players accustomed to the old notation who will ask with which method you have notated their parts.



Representative Horn Passages

Here are several passages that show the various uses of the horn, whether as a solo instrument or in parts for multiple horns.

Solo Passages

EXAMPLE 10-8. Brahms, Symphony No. 1, fourth movement, mm. 30–38

CD-3/TR. 43
INDEX 1 / 0:00

Più Andante
30
C Hn.
f *sempre e passionato*

EXAMPLE 10-9. Beethoven, Symphony No. 6, third movement, mm. 132–153

CD-3/TR. 43
INDEX 2 / 0:44

Allegro
132
F Hn. 1
cresc. *p dolce*
cresc.
141
dolce

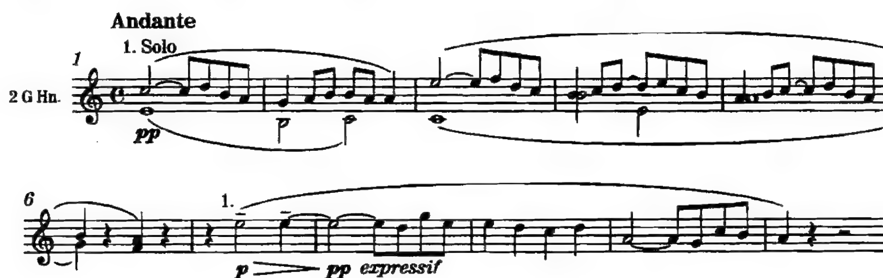
CD-3/TR. 44
INDEX 1 / 0:00

EXAMPLE 10-10. R. Strauss, *Till Eulenspiegel*, mm. 6–12



CD-3/TR. 44
INDEX 2 / 0:21

EXAMPLE 10-11. Ravel, *Pavane pour une infante défunte*, mm. 1–11



Multiple Horns in Unison

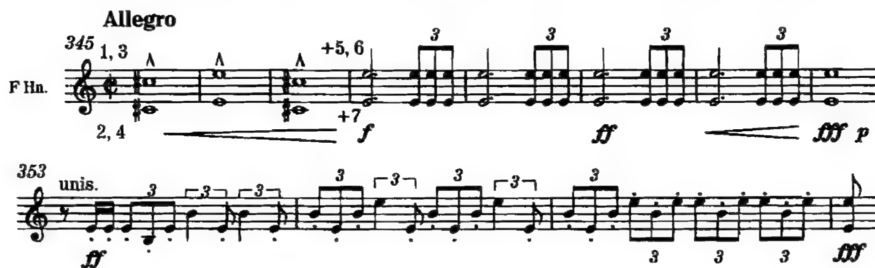
CD-3/TR. 45
INDEX 1 / 0:00

EXAMPLE 10-12. R. Strauss, *Don Juan*, mm. 530–540



CD-3/TR. 45
INDEX 2 / 0:32

EXAMPLE 10-13. Mahler, Symphony No. 1, first movement, mm. 345–356



ADDITIONAL PASSAGES FOR STUDY

Brahms, Symphony No. 4, first movement, mm. 1–4
Dvořák, Symphony No. 5, fourth movement, mm. 132–136
Mahler, Symphony No. 3, first movement, beginning (all eight horns in unison)

Multiple Horns in Harmony

EXAMPLE 10-14. Handel, *Judas Maccabaeus*, "See the Conquering Hero," mm. 9–16

CD-3/TR. 46

9
G Hn.
13

EXAMPLE 10-15. Weber, *Der Freischütz*, Overture, mm. 10–25

CD-3/TR. 47

10 Andante
F Hn.
Soli
C Hn.
Soli
14
F Hn.
C Hn.
18 *mf*
F Hn.
C Hn.
mf
22
F Hn.
C Hn.

CD-3/TR. 48

EXAMPLE 10-16. Humperdinck, *Hänsel und Gretel*, Overture, mm. 1–8

Ruhige, nicht zu langsame Bewegung (♩ = 69)

sehr weich

4 F Hn.

sehr weich

ADDITIONAL PASSAGES FOR STUDY

Franck, Symphony in D minor, second movement, mm. 62–70
Liszt, *Les Préludes*, mm. 69–73
Mahler, Symphony No. 1, first movement, mm. 32–36
Mendelssohn, *A Midsummer Night's Dream*, Nocturne, mm. 72–80
Wagner, *Tannhäuser*, Act I, scene 3, mm. 1–38

Articulation and Tonguing

As on any other wind instrument, all notes within the same slur will be automatically performed in one breath. Two kinds of single tonguing are available to the horn player:

1. regular, staccato, or hard tonguing using the syllable "tuh";

CD-3/TR. 49

EXAMPLE 10-17. Wagner, *Siegfried*, Act I, scene 2, mm. 1–14

Lebhaft

F Hn.

(sehr stark ausgehalten) p

p cresc.

f p

2. soft or legato tonguing using the syllable "duh."

EXAMPLE 10-18. Tchaikovsky, Symphony No. 5, second movement, mm. 8–16

CD-3/TR. 50

Double and triple tonguing are also possible on the horn. The following passage, because of its speed, would probably be double tongued:

EXAMPLE 10-19. Rimsky-Korsakov, *Capriccio espagnol*, fifth movement, mm. 119–131

CD-3/TR. 51

The second of these two examples of triple tonguing is a rather simple instance of repeated notes played softly:

EXAMPLE 10-20. R. Strauss, *Don Juan*, mm. 501–505

CD-3/TR. 52
INDEX 1 / 0:00

CD-3/TR. 52
INDEX 2 / 0:17

EXAMPLE 10-21. Scriabin, *Poem of Ecstasy*, mm. 182–183



Muted and Stopped Horn

CD-ROM
CD-3
MUTED HORN

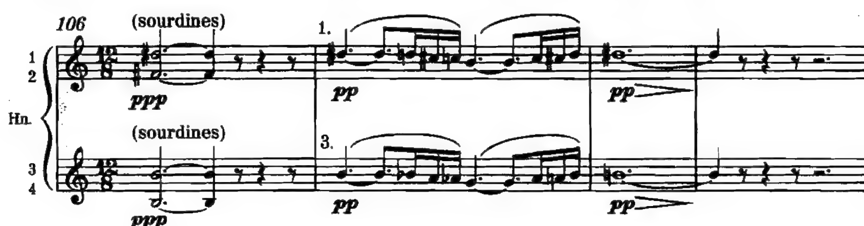
Muted Horn

Con sordino (It.)

When the words *con sordino* appear in a part, a player usually puts a non-transposing mute into the bell. As discussed in the previous chapter, this mute changes the tone color of the instrument but does not change the pitch. Here is a famous passage for muted horns:

CD-3/TR. 53

EXAMPLE 10-22. Debussy, *Prélude à "L'après-midi d'un faune,"* mm. 106–109



At the point where the mute is to be removed the term *senza sordino* must appear in the score.

CD-ROM
CD-3
HAND-STOPPED HORN

Stopped Horn

Chiuso (It.); bouché (Fr.); gestopft (Ger.)

In their respective languages, the words *chiuso*, *bouché*, and *gestopft* all mean "stopped." The player "stops" (or mutes) the horn's tone by inserting the right hand as far as possible into the bell to the throat of the horn, thereby blocking much of the tone. This results in a soft, smooth, but somewhat nasal sound. The stopped horn can be used for single notes or entire passages. In the following excerpt, from Rimsky-Korsakov's *Capriccio espagnol*, the performer is directed to play the first half of the passage open and the second half stopped:

CD-3/TR. 54

EXAMPLE 10-23. Rimsky-Korsakov, *Capriccio espagnol*, second movement, mm. 45–48



The stopped horn is also effective when performing *sf*>*p*.

When a player sees the indication for stopped horn in the score, he or she may elect to use a mute rather than the hand, although the resulting sound would certainly be different. But when a fast switch from open horn to muted horn is required, as in Example 10-24, the hand must be used.

EXAMPLE 10-24. Mahler, Symphony No. 4, fourth movement, mm. 76–79

CD-3/TR. 55

In the score the term *open* must appear when the player is to discontinue stopping the horn.

Special Effects

Trills and Tremolos

Horn trills are produced either with the valve or by manipulating the lips. These trills sound a bit heavy and sluggish, and can have a comical or sardonic effect. The most successful trills involve the major or minor 2nd above or below the main pitch, as in the following two examples:

EXAMPLE 10-25. R. Strauss, *Till Eulenspiegel*, mm. 641–643

CD-3/TR. 56
INDEX 1 / 0:00

EXAMPLE 10-26. R. Strauss, *Salome*, at 360

CD-3/TR. 56
INDEX 2 / 0:13

Tremolos of intervals larger than 2nds are also possible to play, but are extremely difficult and therefore risky in performance.

ADDITIONAL PASSAGES FOR STUDY

Chabrier, *España*, mm. 464–468
Falla, *El Amor brujo*, "Ritual Fire Dance," mm. 249–254
Mahler, Symphony No. 9, second movement, mm. 13–15

Glissandos

Glissandos are infrequently given to the horn, but when employed, sound best going up, in loud passages, and in the upper range where the partials are closest together. Here are two examples of glissandi; the first, because of its speed, is performed as a glissando even though it is notated as an arpeggio; the second, particularly because it descends, usually has to be faked because it is almost impossible to execute. It comes off in performance because the entire orchestra is performing the same glissando.

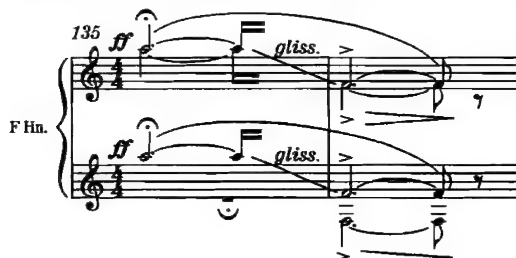
CD-3/TR. 57
INDEX 1 / 0:00

EXAMPLE 10-27. R. Strauss, *Der Rosenkavalier*, Introduction, mm. 30–31



CD-3/TR. 57
INDEX 2 / 0:15

EXAMPLE 10-28. Barber, Symphony No. 1, mm. 135–136



ADDITIONAL PASSAGE FOR STUDY

Stravinsky, *Le Sacre du printemps*, Part II, "Danse sacrale," mm. 152–156

Cuivré (Fr.)

Cuivré ("brassy"), another popular effect, calls for a brassier, harsher sound, obtained by increased lip tension, more breath, and a sharper attack, all of which cause the metal of the instrument to vibrate.

CD-3/TR. 58

EXAMPLE 10-29. Bizet, *L'Arlésienne* Suite No. 1, "Carillon," mm. 1–4



Bells Up

Pavillons en l'air (FR.); Schalltrichter auf (GER.)

Some composers ask that a passage be played "bells up" or "bells in the air." To create this effect, the horn player removes the right hand from the bell and uses it to turn the bell upward so that the opening faces the audience. This effect often is used for very loud and boisterous passages.

EXAMPLE 10-30. Mahler, Symphony No. 4, third movement, mm. 319–326

CD-3/TR. 59

Pesante

319 Schalltrichter auf

1, 2

F Hns.

Schalltrichter auf

3, 4

323

1, 2

F Hns.

3, 4

TRUMPET

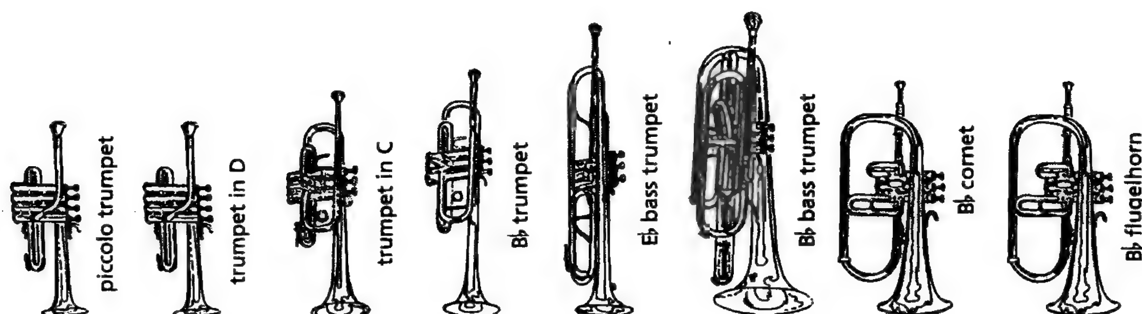
Tromba, (IT.); Trompette (FR.); Trompete (GER.)

The trumpet, the soprano member of the brass family, is the most agile of the brass instruments. It is often called on to perform not only very high passages, both loudly and softly, but also passages that exploit its entire range at various dynamic levels. This instrument, played in both fast passages and slow ones, has been favored by composers to create an aura of anticipation or excitement.



BARBARA BUTLER, TRUMPET

THE TRUMPET FAMILY



The Natural Trumpet

At first glance, it would seem that the history of the trumpet and trumpet playing closely parallels that of the horn. Like the horn, the early trumpet was valveless, resembling the bugles we know today. Its fundamental pitch was governed by the length of its tube. Its tone was brilliant. The Baroque period saw an extraordinary outburst of trumpet virtuosity—what we have come to call the art of clarino playing. The demands made on the trumpet at that time rivaled those for the oboe and violin. Here is a typical clarino part by Johann Sebastian Bach:

CD-3/TR. 60

EXAMPLE 10-31. Bach, Cantata No. 51, "Jauchzet Gott in allen Landen," last movement, "Alleluja," mm. 5–16



With the rise of the homophonic style in the mid-eighteenth century, intricate, showy clarino playing virtually disappeared. The diatonic melodies required by the new style, which were normally written as the top voice, would sound extremely piercing and obtrusive on the trumpet. Composers instead relegated this instrument to an accompanimental role, holding long tonic or dominant pedal tones or playing in chordal passages during tutti sections.

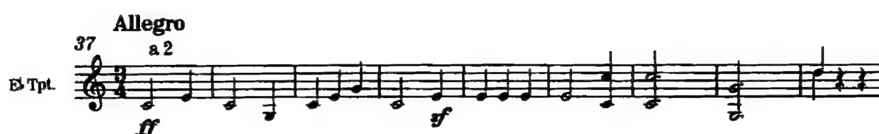
CD-3/TR. 61

EXAMPLE 10-32. Haydn, Symphony No. 94 ("Surprise"), fourth movement, mm. 249–268



EXAMPLE 10-33. Beethoven, Symphony No. 3 ("Eroica"), first movement, mm. 37–45

CD-3/TR. 62



EXAMPLE 10-34. Mozart, Piano Concerto K. 503, third movement, mm. 24–32

CD-3/TR. 63

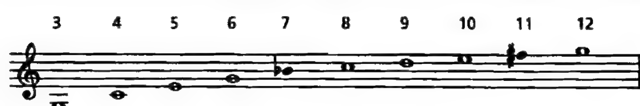


This practice continued into the nineteenth century, until the advent of the valve trumpet. In Classical-period concertos, however, such as those written by Haydn and Hummel, the trumpet's true potential continued to be exploited.

Range

The range of the natural trumpet is governed by constraints similar to those on the natural horn. Whereas Baroque composers drew on pitches up to the sixteenth partial of the harmonic series, after clarino playing disappeared Classical composers seldom wrote for higher than the twelfth partial. For all practical purposes, the first two partials were unplayable on all but the F trumpet (see transposition chart below), and even on that instrument the pitches were quite uncertain. Thus, the Classical composer had the following limited choices of pitches:

EXAMPLE 10-35. Available Pitches on the Trumpet during the Classical Period



The seventh partial was always very flat and had to be adjusted by the embouchure. The eleventh partial, which on a C instrument actually lies between F♮ and F♯, had to be corrected to an even greater extent, through the player's skill in manipulating the embouchure (the "right hand in the bell" adjustment cannot be accomplished on the trumpet).

Transpositions

The C trumpet is nontransposing and sounds as written. The crooks used to transpose the natural trumpet to different keys did not carry alto-basso designations; of the seven most popular, four transpose up and three transpose down:

	Trumpet in	Sounds
Transposing (sounding) up:	F	a perfect 4th up
	E	a major 3rd up
	E♭	a minor 3rd up
	D	a major 2nd up
	C	sounds as written
Transposing (sounding) down:	B	a minor 2nd down
	B♭	a major 2nd down
	A	a minor 3rd down

As far as we know, these were the only trumpet crooks in use. Some Classical works call for trumpet in G and in A♭, as well as other keys, but for these transpositions the most popular crooks were used, with adjustments made by the player.

Examples 10-32, 10-33, and 10-34 (pp. 326–327) illustrate the limitations placed on the trumpet during the Classical period by requirements of orchestral balance. Sometimes strange voice leading resulted from the unavailability of certain notes; for instance, in the following example a most "unclassical" leap of a major 9th in the second trumpet part results because the C trumpet could not play or double any other note in the D minor chord heard in measures 221–222:

CD-3/TR. 64

EXAMPLE 10-36. Beethoven, Symphony No. 6, fifth movement, mm. 219–223



At the end of the Classical period Beethoven introduced a more idiomatic style in trumpet parts, such as the thrilling passages from his Symphony No. 5 and the stunning fanfare from the *Leonore* Overture No. 3:

CD-3/TR. 65
INDEX 1 / 0:00

EXAMPLE 10-37. Beethoven, Symphony No. 5, second movement, mm. 147–158



CD-3/TR. 65
INDEX 2 / 0:37

EXAMPLE 10-38. Beethoven, Symphony No. 5, fourth movement, mm. 1–6



CD-3/TR. 65
INDEX 3 / 0:59

EXAMPLE 10-39. Beethoven, *Leonore* Overture No. 3, mm. 295–300



It is interesting to note that the natural horn was used in the Classical and early Romantic orchestra much more frequently than the natural trumpet, probably due to the horn's less piercing tone quality, even in its higher registers. This was also partly true with the cornet, which, as we shall see shortly, was much mellower in sound because of the size of its bore, the cornet being a descendant of the posthorn family rather than the trumpet family. In his *Symphonie fantastique* Berlioz assigns rather uninspiring parts to the two trumpets and more interesting parts to the two cornets, which at that time had valves and were fully chromatic.

Two later examples for the natural trumpet are the following:

EXAMPLE 10-40. Tchaikovsky, *Capriccio italien*, mm. 1–7

CD-3/TR. 66
INDEX 1 / 0:00

1 **Andante un poco rubato** ♪ = 132

2 E Tpt.

ff *p*

EXAMPLE 10-41. Mendelssohn, *A Midsummer Night's Dream*, "Wedding March," mm. 1–5

CD-3/TR. 66
INDEX 2 / 0:30

Allegro vivace

1 a 3

3 C Tpt.

f

The Valve Trumpet

The earliest valve trumpets made their appearance around the middle of the nineteenth century. They were made from the natural F trumpets, to which three valves had been added. Their range extended from the third to the twelfth harmonic, and all chromatic tones in between.

EXAMPLE 10-42. Range

Written Sounding

The instrument, with its large and noble sound, tends to dominate the orchestra. Melodies written for it by Mahler, Bruckner, Richard Strauss, and others (see Examples 10-43 and 10-44) sound most impressive when played on this trumpet. Yet because its tremendous carrying power overshadows the other instruments of the brass section, it was dropped by most composers around the turn of the twentieth century, who favored the more modern, smaller valve trumpets in C and B♭.

CD-3/TR. 67

EXAMPLE 10-43. Bruckner, Symphony No. 7, first movement, mm. 233–241

CD-3/TR. 68

EXAMPLE 10-44. Mahler, Symphony No. 2 ("Resurrection"), first movement, mm. 192–197

Up until the middle of the nineteenth century, composers notated natural trumpet parts in the keys of the crooks. Later in the nineteenth century it seems that most players performed these parts on the valve trumpet in F. In his revision of Berlioz's *Treatise on Instrumentation,* Richard Strauss has suggested that the best procedure to follow in writing for trumpet is to notate the part in C and let the player make the correct transposition, on the F trumpet or on another appropriate instrument. How much this practice was followed in the late nineteenth and early twentieth centuries is not known.

CD-ROM
CD-3
TRUMPET

The Modern Trumpet

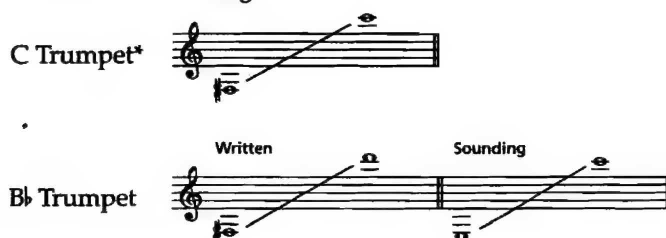
As the demand for a higher tessitura increased and the preference for a more brilliant tone and greater agility in playing the instrument grew, the smaller B♭ and C valve trumpets gradually became the standard instruments of the sym-

phony orchestra. Today, a variety of high trumpets are available (including the D and piccolo B♭), and they are often called on to perform Baroque music as well as recent music written in a high tessitura.

Although the C trumpet does not need to be transposed, the B♭ trumpet (as well as the less common D and piccolo B♭ trumpets) must be notated in the correct transposition. No matter what instrument you ask for in a score, the trumpeter will choose the one most convenient for his or her use in a particular work. Many professionals today own D trumpets and prefer to play certain high passages on this smaller instrument. Most nonprofessional players, however, own only B♭ trumpets.

Range and Registral Characteristics

EXAMPLE 10-45. Range



*Many trumpeters are able to play higher than the range given here, but it is risky to write above C⁵.

The modern B♭ and C trumpets are fitted with three piston valves. The C trumpet, the smaller of the two, is preferred by some composers because it has a more brilliant, focused sound and produces the higher notes more easily. The B♭ trumpet is a bit "fatter" and richer in sound and has a fine low register; it is commonly used in bands and jazz groups as well as in the symphony orchestra. At one time all B♭ trumpets were equipped with a small slide that transformed them into A instruments, but the slide proved to be so unreliable that it was eventually discontinued.

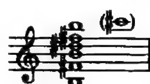
The following chart shows the pitches that are easily available by depressing each valve. Remember that depressing the first valve lowers the "open" pitch a whole step; depressing the second valve lowers it a semitone, and depressing the third valve lowers it a tone and a half. If more than one valve is depressed, these actions are combined.

FINGERING ON THE MODERN C TRUMPET

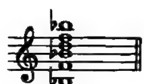
Open



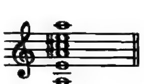
Second valve depressed



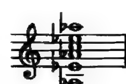
First valve depressed



Third valve depressed, or one and two



Second and third valves depressed



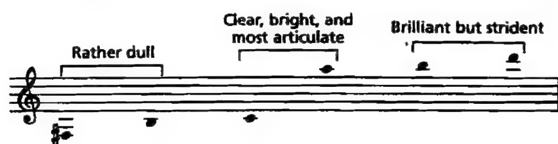
First and third valves depressed



All valves depressed



EXAMPLE 10-46. Registral Characteristics for both C and B♭ Trumpets



On the trumpet, a loud passage is much simpler to play than a very soft one, particularly in the high register. In the low register, a *pianissimo* is also hard to control; therefore, loud notes, even those that are extremely loud, are safer to write than soft ones. The middle register, from middle C to B♭^{5}, is the most manageable for all players, and in this range all dynamics can be played successfully by professionals. However, nonprofessional trumpet players will have difficulty controlling soft dynamics almost anywhere in the range.

The following melody encompasses the entire range of the trumpet and shows twentieth-century writing characteristic of this instrument.

CD-3/TR. 69

EXAMPLE 10-47. Copland, *Outdoor Overture*, mm. 16–31

Moderato

B♭ Tpt. solo

mp *freely, with natural expression*

p

ADDITIONAL PASSAGES FOR STUDY

Bartók, *Concerto for Orchestra*, fifth movement, mm. 201–211
Schoenberg, *Five Pieces for Orchestra*, No. 2 ("Vergangenes"), mm. 129–131
Shostakovich, Symphony No. 1, second movement, mm. 113–116
Shostakovich, Symphony No. 5, last movement, mm. 2–11
Stravinsky, *Renard*, 4 mm. before [37] to [39]
Stravinsky, *Le Rossignol* (throughout)

Articulation and Tonguing

The trumpet is the fastest-speaking instrument in the brass choir. All slurred notes are performed in one breath, and all separate notes are tongued. All kinds of fast passages, both slurred and tongued, are possible; single, double, and

triple tonguing are used constantly on this instrument. The following examples illustrate both double and triple tonguing.

EXAMPLE 10-48. Puccini, *La Bohème*, Act II, opening (double tonguing on ♫ only)

CD-3/TR. 70
INDEX 1 / 0:00



EXAMPLE 10-49. Verdi, *Aïda*, Act I, "Celesta Aïda," mm. 1–13 (triple tonguing)

CD-3/TR. 70
INDEX 2 / 0:15

ADDITIONAL PASSAGES FOR STUDY

Bruckner, Symphony No. 7, third movement, mm. 77–88
Dukas, *L'Apprenti sorcier*, mm. 606–615
Ravel, *Daphnis et Chloé*, Suite No. 2, mm. 10–15
Rimsky-Korsakov, *Capriccio espagnol*, third movement, mm. 37–41
Rossini, *William Tell*, Overture, mm. 226–241
Shostakovich, Symphony No. 1, first movement, mm. 1–8
R. Strauss, *Till Eulenspiegel*, mm. 544–564
Wagner, *Tannhäuser*, Act II, scenes 3 and 4, mm. 72–75, mm. 204–210

Muted Trumpet

CD-ROM
CD-3
MUTED
TRUMPET

In orchestral literature muted passages are very common. The direction given in the score for using a mute is usually *con sordino*, and for removing it *senza sordino*. German composers of the later nineteenth century frequently used the words *gestopft* ("stopped") and *offen* ("open"), the latter indicating to remove

the mute. In recently composed scores one sees the English word *open* as often as *senza sordino*.

When muting is called for, the orchestral trumpet player will use a straight mute unless another mute is specified in the score. Unlike the straight mute for horn, that for the trumpet does not affect transposition and therefore does not need a mechanism within it to correct the pitch; but like the straight mute for horn, the trumpet mute softens the sound and changes the tone color of the instrument.

Stopping the sound with the hand is impossible on the trumpet. However, the hand can be used to hold certain mutes, such as the plunger, which greatly softens the instrument, or the harmon mute, which produces the jazzy "wa-wa" effect when the stem is moved into and out of the bell.

The other trumpet mutes pictured in Chapter 9, such as the bucket mute, solotone mute, cup mute, and whispa mute have been used primarily by dance and theater orchestras, but have found their way into the symphonic literature in recent decades. Many trumpet players have also invented their own mutes, producing ever new sounds. In addition to using mutes, orchestral trumpet players may be asked to play "into the hat" or "into the stand," whereby they will point the instrument into a plastic or felt hat held by the hand or play very close to the stand.

Here are some representative orchestral passages for muted trumpet. The first two examples use the straight mute and the third the harmon mute. Example 10-50 is in two parts: the trumpets first play without mutes and then with mutes a half step lower:

CD-3/TR. 71

EXAMPLE 10-50. Mahler, Symphony No. 1, fourth movement, mm. 623–625 and mm. 592–594

EXAMPLE 10-51. Debussy, *Nocturnes*, "Fêtes," mm. 124–131

CD-3/TR. 72

EXAMPLE 10-52. Gershwin, *Rhapsody in Blue*, mm. 16–19

CD-3/TR. 73

ADDITIONAL PASSAGES FOR STUDY

Bartók, *Concerto for Orchestra*, second movement, mm. 90–101
Stravinsky, *Petrushka*, Second Tableau, mm. 33–39

Special Effects

Trills

Most trills on the trumpet are executed by manipulating the valves; in the high register some trills can be played by moving the lips. Trills that involve changing only one valve are very playable; those that involve changing two valves are more awkward; and those that involve changing all three valves, particularly those given below (see the fingerings below the staff), are very difficult and should be avoided, if possible.

EXAMPLE 10-53. Trills to Be Avoided

Glissandos

The trumpet is sometimes asked to play glissando. This is effective only when performed in an upward direction and in the uppermost register, where

the partials are close together. Players can also bend a pitch downward a quarter tone or half step, an effect used only by more recent composers.

CD-3/TR. 74

EXAMPLE 10-54. Upward Glissandos and Bending Pitches Downward

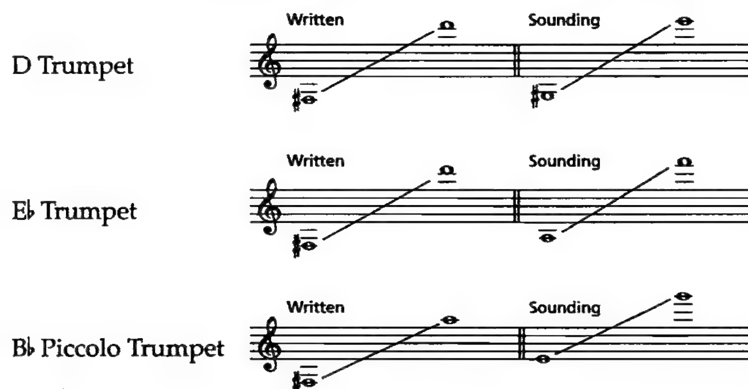


Auxiliary Trumpets

The D trumpet, which is more and more frequently used in the symphony orchestra, is a small, brilliant-sounding instrument with a very piercing, bright tone. This instrument's range and playing techniques are very similar to those of the C and B♭ trumpets. Its low register (below middle C) is not very manageable; but one should keep in mind that the D trumpet, as well as the lesser-known E♭ trumpet, is usually used in its higher register.

Today, Baroque clarino parts are performed on D and E♭ trumpets, or on the B♭ piccolo trumpet, which transposes up a minor 7th and has an effective range from B♭³ to A⁵.

EXAMPLE 10-55. Ranges of the D, E♭, and B♭ Piccolo Trumpets



Here are some passages for these instruments.

CD-3/TR. 75
INDEX 1 / 0:00

EXAMPLE 10-56. Stravinsky, *Le Sacre du printemps*, Part I,"Jeux des cités rivales," mm. 38–42



EXAMPLE 10-57. Bach, *Christmas Oratorio,* Introduction to Final Chorus (No. 64, "Chorale")

CD-3/TR. 75
INDEX 2 / 0:20



EXAMPLE 10-58. D'Indy, Symphony in B-flat, fourth movement, mm. 336–343

CD-3/TR. 75
INDEX 3 / 0:49



CORNET

Since its invention in the early nineteenth century the cornet has had valves, a fact that invited composers to write for it before the valve trumpet became readily accepted. Even though many orchestral composers since Berlioz have used the cornet in their scores, this instrument has never become a regular member of the symphony orchestra, and instead was almost completely supplanted by the valve trumpet, with its greater brilliance of tone and ability to match the cornet in versatility. The cornet has been a regular member of the wind ensemble, however, and has been used ubiquitously in many theater orchestras, especially in Europe. It is ideal for playing music written for military functions, and in a great deal of nineteenth- and twentieth-century scores has been assigned folklike tunes.

The cornet looks like a modern trumpet and is played with a cup mouthpiece. Its transposition has been standardized to B♭, with the same range as the B♭ trumpet (see p. 331). The instrument has as much agility as the trumpet and is very secure in pitch. Since its bore is two-thirds conical and one-third cylindrical, its tone is more mellow, sounding more like a cross between a horn and a trumpet.

Here are two wonderful cornet passages from the orchestral literature.

EXAMPLE 10-59. Tchaikovsky, *Capriccio italien,* mm. 232–240

CD-3/TR. 76





CD-3/TR. 77

EXAMPLE 10-60. Stravinsky, *Petrushka*, Second Tableau, "Ballerina's Dance," mm. 1–29

Allegro (♩=116)

B♭ Cor. 1

Military Dr.

sub. p

ADDITIONAL PASSAGES FOR STUDY

Berlioz, *Symphonie fantastique*, fourth movement, mm. 62–69
Prokofiev, *Lieutenant Kijé*, first movement, mm. 1–5

OTHER MEMBERS OF THE TRUMPET FAMILY

Bass Trumpet

The bass trumpet is really a trombone with valves. It is played usually by trombone players, who use a trombone mouthpiece. The bass trumpet comes in C, B♭, D, or E♭. The C instrument sounds an octave lower than written; the B♭ a major 9th lower than written, the D a minor 7th lower than written; and the E♭ a major 6th lower than written.

EXAMPLE 10-61. Ranges of the C, B♭, E♭, and D Bass Trumpets

Written Sounding

C Bass Trumpet

Written Sounding

B♭ Bass Trumpet

Written Sounding

E♭ Bass Trumpet

Written Sounding

D Bass Trumpet

Here are two examples of bass trumpet writing.

EXAMPLE 10-62. Wagner, *Die Walküre*, Act III, mm. 12–18

CD-3/TR. 78
INDEX 1 / 0:00

Allegro

13

D Bs. Tpt.

f

EXAMPLE 10-63. Wagner, *Die Walküre*, Act III, Wotan's aria "Denn Einer nur freie die Braut," mm. 1–4

CD-3/TR. 78
INDEX 2 / 0:20

Andante

1

D Bs. Tpt.

p *p*

Flugelhorn

The flugelhorn is a member of the bugle and cornet family. It is infrequently used in the symphony orchestra but quite often in bands, wind ensembles, and jazz ensembles. The name comes from *Flügelmann* ("wing man"), the designation of the person who marched in the front right-hand corner of the German military band formation. The first flugelhorns, manufactured in Austria between 1820 and 1830, retain the wide conical bore and medium-sized bell of their antecedent, the keyed bugle. Over time manufacturers have narrowed the bore so that now the only difference between a cornet and a flugelhorn is the latter's larger bell.

The most commonly used flugelhorn today is in B♭, although there used to be flugelhorns in E♭, F, and C. The modern instrument has three valves and is played with a funnel-shaped mouthpiece, which differs from that of the cornet in its greater width and depth.

The flugelhorn shares the range as well as transposition of the cornet. It also sounds a major 2nd lower than written.

EXAMPLE 10-64. Range



Its very mellow, lush sound approaches that of the horn even more than the cornet's. In the early twentieth century the flugelhorn at times may have performed the high horn solo in the "Quoniam" from Bach's B-minor Mass.

Although the flugelhorn is rarely found today in the symphony orchestra, Stravinsky wrote for it in a now-famous passage from *Threni*.

CD-3/TR. 79

EXAMPLE 10-65. Stravinsky, *Threni*, mm. 89–99



TROMBONE

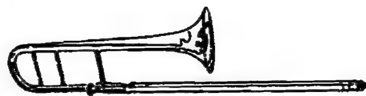
Posaune (GER.)

The trombone is an extremely versatile orchestral instrument. It can be used for solos as well as for providing a warm harmonic background. It also works well as a contrapuntal partner with other trombones or with instruments of other orchestral sections, and is an effective doubler, with its mellow tone and large dynamic range. All articulations, including wide skips, sound effective on the trombone.

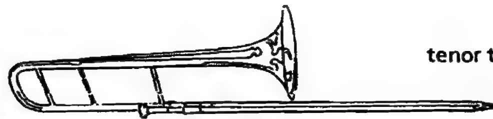


JOHN MARCELLUS, TROMBONE

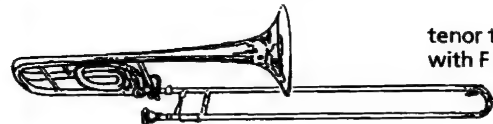
THE TROMBONE FAMILY



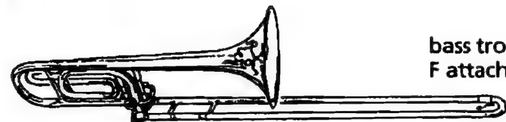
alto trombone



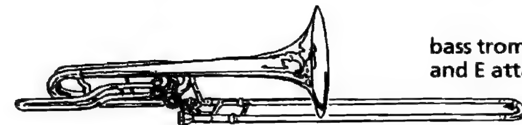
tenor trombone



tenor trombone with F attachment



bass trombone with F attachment



bass trombone with F and E attachments

As its name implies, the trombone is actually a big trumpet. One of its predecessors may have been the bass trumpet, whose unwieldy length of tubing was either wound in coils or partly cut out. The latter solution was the source of the trombone, whose tube was cut into two U-shaped pieces, one of which slides into the other. This mechanism permits the player to change pitches and make fine tuning adjustments by lengthening or shortening the outer tube, called the *slide*, with the arm.

The tube of the trombone is cylindrical for about two-thirds of its length and becomes conical toward the bell. This cone is smaller in alto and tenor trombones and flares out much more in bass trombones, which facilitates the playing of lower partials.

Three different trombones—the tenor, bass, and alto—are used in the orchestra today; all are nontransposing instruments. Their total range provides the composer or orchestrator with a great compass of pitches from which to choose. Many more types of trombones, some of which transpose, have been invented, and some of these are still employed in ensembles such as the British brass band, which also uses different types of transposing tubas.

For about the past one hundred years the symphony orchestra's trombone section has consisted of three trombones: two tenors and one bass. Parts that were written for the alto trombone in the nineteenth century have been played by the tenor trombone throughout most of the twentieth century; but lately alto trombones are making a comeback and are reclaiming some of the parts originally written for them.

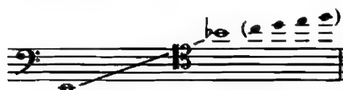
CD-ROM
CD-3
TROMBONE

Tenor Trombone

Of the three versions of the trombone, the tenor is the most common in modern symphony orchestras. Tenor trombone parts, like those for bass trombone (discussed below), are notated in the bass clef up to about G^4, where they switch to the tenor clef to prevent the use of ledger lines.

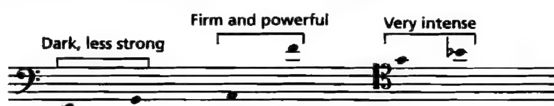
Range and Registral Characteristics

EXAMPLE 10-66. Range



The normal range of the tenor trombone extends from E^2 to B^4. The black noteheads in Example 10-66 indicate additional pitches that professionals usually can play, albeit with difficulty.

EXAMPLE 10-67. Registral Characteristics



Playing Positions

Each of the seven different playing positions of the slide on the tenor trombone, from B♭ in first position down to E♮ in seventh position, lowers the pitch one half step from the previous position. In seventh position the slide is all the way out.

EXAMPLE 10-68. The Seven Playing Positions on the Trombone



The fundamental of each position is called a *pedal tone*. They are seldom called for in orchestral music, but do occur in literature for solo tenor trombone. Only the fundamentals of the first three positions are good; the others are quite difficult to control. Thus, for all practical purposes the harmonic series of each position begins on the second partial, since from there on up the series all tones are easy to produce.

Many pitches can be produced in more than one position—for instance, D^4 can be played in the fourth and seventh positions—but all notes below A♭^{3} are available in only one position. Because of this, the following passage would be

difficult in a fast tempo, especially for nonprofessionals, as it continually alternates between two extreme positions:

EXAMPLE 10-69. Difficult Position Changes



The F Trigger

The tenor trombone's range can be extended downward with a mechanism called an *F trigger* or *F attachment*, a rotary valve manipulated by the left thumb that activates extra tubing. This mechanism creates a double instrument (similar in principle to the double horn) by making an F instrument out of a B♭ one. The F trigger enables the tenor trombonist to play pedal tones down to C^1.

Many tenor trombones made today have the same range as bass trombones (see immediately below), because they have not only the F trigger and its extra tubing that extends the range but also D and G♭ triggers that make it easier to play in certain keys. However, because the tenor trombone is not constructed like the bass trombone, it sounds less sonorous in the lower register.

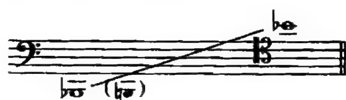
Bass Trombone

The bass trombone is usually the third of the three trombones employed in the standard symphony orchestra. It has a noticeably different timbre from the tenor trombone, caused by its larger bore and bell and use of a larger mouthpiece.

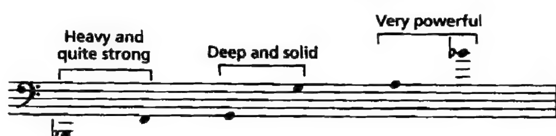
Range and Registral Characteristics

Like the tenor trombone, the bass trombone is pitched in B♭. The practical limits of the bass trombone's range are:

EXAMPLE 10-70. Range



EXAMPLE 10-71. Registral Characteristics



Triggers

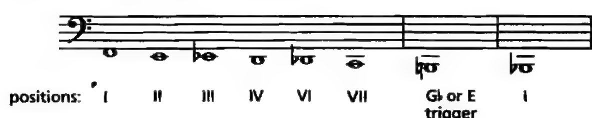
The bass trombone always has an F trigger, which, like that for the tenor trombone, gives it the ability to extend its range down to the pedal tone C^1. In

Example 10-70 we give a B♮[2] in parentheses, a pitch that cannot be played on the bass trombone unless it has a G♭ trigger (or the player fakes the note). Most new bass trombones have this attachment. The combination of G♭ and F triggers transforms the bass trombone into a triple instrument. The very newest bass trombones also have a D—and even E*—attachment, permitting an even greater variety of keys and making particular glissandi that much easier to play.

Playing Positions

The six positions of the bass trombone with F trigger are given in Example 10-72. The notes given for each position represent its second partial; each position is able to extend upward to the tenth or twelfth partial.

EXAMPLE 10-72. Playing Positions on the Bass Trombone



Notice that there is no fifth position on the bass trombone. Because of the length of the B♭ tenor trombone slide, which is also used on the bass trombone, the bass trombone player must extend each position slightly to compensate for the larger instrument. (The positions on the tenor trombone are approximately three to three and a half inches apart; on the bass trombone with F attachment they are four to five inches apart.) Therefore, because of the larger distance between positions, Position V is eliminated, resulting in six positions: I, II, III, IV, VI, and VII. To play B♭[1] the player simply releases the F trigger.

Pedal tones are easier to produce on the bass trombone than on the tenor. Many composers from the time of Wagner onward—and even before that, Berlioz—have used them. They have a very full sound with great carrying power, but you must be careful not to write them into passages that are too rapid, since the technique of producing these notes is quite tricky. Here are the practical pedal tones for the bass trombone:

EXAMPLE 10-73. Pedal Tones on the Bass Trombone



Alto Trombone

The alto trombone was used extensively throughout the nineteenth century, especially by German and Italian composers. During the eighteenth century it was used as a solo instrument. Although the alto trombone fell into disuse toward the end of the nineteenth century, many first trombonists are once again taking up this instrument to play high-tessitura parts as well as those originally written for it.

*If the E attachment is not already provided on the instrument a player can pull out the F trigger to turn it into an E trigger.

Range and Registral Characteristics

The alto trombone is pitched in E♭. Parts for it are generally notated in the alto clef.

EXAMPLE 10-74. Range

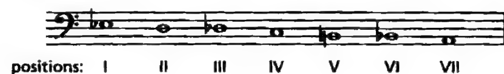


The alto trombone has a narrower bore than its two cousins, producing high notes that are pure and mellow, yet brilliant and not so piercing as those of the tenor trombone. The notes from E♭^{3} downward are weak and sound quite poor; the fundamental or pedal tones are not really feasible on this instrument. Therefore, the first playable note of each series are the second partials (see Example 10-75).

Positions

The seven positions of the alto trombone are given in Example 10-75. The notes for each position represent its second partial; each position is able to extend upward to the tenth or twelfth partial.

EXAMPLE 10-75. Playing Positions on the Alto Trombone



Articulation and Tonguing

Although single, double, and triple tonguings are possible on the trombone, fast tonguings are a little more difficult than on the trumpet because of the trombone's larger mouthpiece. In addition, the larger size of the instrument makes articulation in the extreme low register a bit sluggish and heavy.

A perfect legato can be obtained only between two notes in the same harmonic series, but professional trombonists have perfected their coordination of soft tonguing and change of position to give an almost perfect impression of legato playing. In the following example, which was orchestrated by Süssmayr, a pupil of Mozart, after his master's untimely death, the beautiful legato solo of the "Tuba mirum" is assigned to the trombone.

EXAMPLE 10-76. Mozart, Requiem, "Tuba mirum," mm. 1–18

CD-3/TR. 80





The following examples show characteristic orchestral settings involving one, two, or more trombones that use a variety of articulations.

CD-3/TR. 81

EXAMPLE 10-77. Beethoven, Symphony No. 9, fourth movement, "Seid umschlungen," mm. 1–8 (one trombone)



CD-3/TR. 82

EXAMPLE 10-78. Berlioz, *Rákóczy March*, mm. 96–105 (three trombones)



CD-3/TR. 83

EXAMPLE 10-79. Brahms, Symphony No. 1, fourth movement, mm. 47–51 (three trombones)



ADDITIONAL PASSAGES FOR STUDY

Bach, Cantata No. 118, "O Jesu Christ, meins Leben Licht," "Sinfonia," mm. 1–8 (three trombones)
Schumann, Symphony No. 3, fourth movement, mm. 1–8 (three trombones)
R. Strauss, *Till Eulenspiegel*, mm. 546–553 (three trombones)
Wagner, *Tannhäuser*, Overture, mm. 37–53 (three trombones)

Muted Trombone

CD-ROM
CD-3
MUTED
TROMBONE

We introduced several different kinds of trombone mutes in Chapter 9 (pp. 307–311). Like horn and trumpet mutes, those for the trombone change the instrument's tone color and enable the trombonist to play very softly.

The following two passages from twentieth-century literature require trombone mutes. In the Berg example the trombones are doubled by cellos and double basses playing *col legno* (not heard on the recording).

EXAMPLE 10-80. Sessions, Symphony No. 2, fourth movement, mm. 68–70

CD-3/TR. 84
INDEX 1 / 0:00

Allegro
68
con sordini
Trb. 1 2 3
p dim. pp

EXAMPLE 10-81. Berg, Violin Concerto, first movement, mm. 45–51

CD-3/TR. 84
INDEX 2 / 0:18

Slowly
45
m. Dpf
Ten. Trb.
Bs. Trb.
p poco mp
mp poco fp mp

Glissandos

The *slide glissando* on the trombone is the most natural to play, since the trombonist can quickly move the slide between two or more notes, in the manner of a string player's glissando using one finger on one string. But no slide glissando can be larger than a tritone, the interval that encompasses the same partial in all positions. In addition to the slide glissando there is a *lip glissando*, as well as a combination slide and lip glissando.

The following three passages illustrate glissando on the trombone. The glissando is less distinct in the second example, but Britten nevertheless gives a very jazzy feeling to the passage. The Bartók example shows a type of glissando similar to that executed by the horn over the harmonic series. Because this type of glissando has not been used too often it sounds quite effective.

EXAMPLE 10-82. Khachaturian, *Gayne* Ballet, Suite No. 1, "Sabre Dance," mm. 10–11

CD-3/TR. 85
INDEX 1 / 0:00

Presto
10
gliss.
Trb.
f

CD-3/TR. 85
INDEX 2 / 0:14

EXAMPLE 10-83. Britten, *The Young Person's Guide to the Orchestra*, Fugue, at [L]

* ⊕ means to be played quasi glissando

CD-3/TR. 86

EXAMPLE 10-84. Bartók, Violin Concerto No. 2, third movement, mm. 593–600

OTHER MEMBERS OF THE TROMBONE FAMILY

Contrabass Trombone

Wagner, Strauss, and Schoenberg are among the few composers who have called for the contrabass trombone, pitched in B♭, an octave below the tenor trombone. Verdi, especially in *Falstaff*, also wrote parts for it; however, in Italy the contrabass trombone was a valved instrument. Since the contrabass trombone taxes the performer so greatly, we advise not to write for this instrument; parts originally written for it are now played on the tuba.

Valve Trombone

This instrument uses valves rather than a slide to produce different pitches. It has made very little impact on the orchestra, but is employed with some success in bands. The valve trombone is actually a large trumpet, but what it might offer in facility and agility it loses in character; it also presents severe difficulties in intonation. We urge not to write for this instrument either, since very few orchestral musicians own one.

TUBA

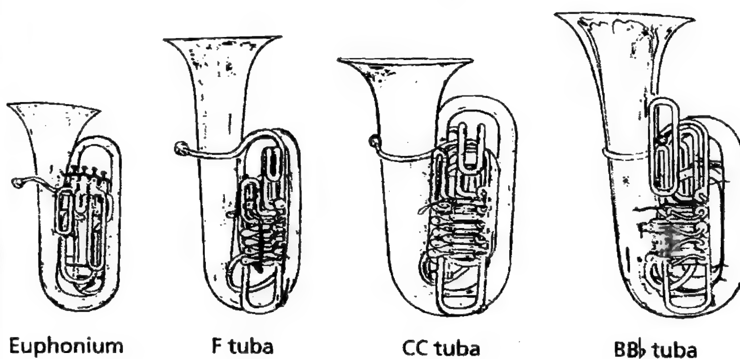
CD-ROM
CD-3
TUBA

The tuba is the true bass of the brass choir and therefore shares the same status as the double bass and contrabassoon. It has been used successfully as a solo orchestral voice and in combination with other instruments. The tuba blends well with the three trombones of the brass section, providing an excellent bass for them. It also mixes beautifully with the trumpets, as well as with the horns.

Today's orchestra generally employs one tuba player. Many composers, however, have written scores with two tuba parts (Stravinsky, Schoenberg, and



THE TUBA FAMILY



CHERRY BEAUREGARD, F TUBA

Harris, among others), primarily to strengthen the bass of an oversized horn and trumpet section, but also to prevent a single tuba player from becoming overtaxed. The first player can be assigned the higher tessitura and the second the lower tessitura.

The tuba as we know it today was not introduced into the symphony orchestra until around 1875, when Richard Wagner conceived of and wrote for the instrument. The Wagner tuba was shaped like a horn and had a sound very much like that instrument but in a much lower range; it therefore provided bass support for the trumpets and trombones. This instrument replaced the ophicleide (see below), which had been used since the beginning of the nineteenth century.

Wagner wrote for a whole family of tubas in his *Ring* cycle: tenor tubas in B♭ and E♭ and bass tubas in F and BB♭ (pronounced "double B-flat," an octave below the B♭ tenor tuba). These instruments were actually extensions of the horn family and were usually played by horn players. Not many composers other than Wagner, his contemporary Bruckner, and his disciple Richard Strauss adopted the family of Wagner tubas, and gradually the bass tuba in F became the standard orchestral instrument.

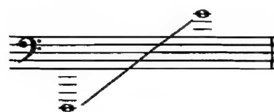
Today's performer can choose from five or six tubas, which range from the B♭ tenor tuba through the F, E♭, and C bass tubas to the CC and BB♭ contrabass tubas.* In contrast to the Wagner tubas, all modern tubas are nontransposing; the pitch designations in each of their names refer only to their range, fundamentals, and pedal tones. The C and BB♭ tubas are favored by symphonic tuba players because the fingering is more comfortable on them and all pitches found in the repertoire can be produced on them.

The instrument is constructed with a wide conical bore and a very wide bell; it employs either a piston, or more commonly, a rotary valve system. The valve system is of the same design as that for the horn and trumpet, with an added fourth valve that lowers the fundamental a perfect 4th. Some tubas have a fifth and even a sixth valve, but these are rare. The tubist plays into a very deep cup mouthpiece, which facilitates the sounding of low notes as well as pedal tones.

Range and Registral Characteristics

The modern tuba is always notated in the bass clef.

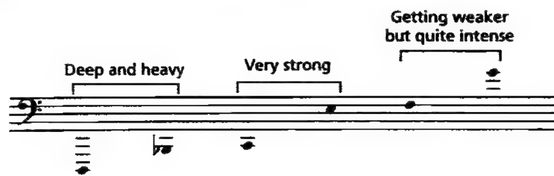
EXAMPLE 10-85. Range



Any tuba player in the modern symphony orchestra will be able to play anywhere in its wide range. Many tubists, however, own more than one instrument and will change instruments if another is more appropriate for a particular score.

*In bands, the Sousaphone, with its strangely rearranged bell, is popular but never used in a modern symphony orchestra. It is able, however, to play all parts originally written for the tuba.

EXAMPLE 10-86. Registral Characteristics



Because of its size the instrument speaks a bit sluggishly at the bottom of its range, but is refreshingly agile from its middle register on up. Its low register has been described as weaker in sound than its strong middle register; but if the low notes are written as slow-moving bass notes they can be controlled very well and will sound effective at any dynamic level, from *ff* to *pp*.

In the middle register the tuba's tone color is smooth and round, like that of the horn, due to its conical bore and deep mouthpiece. Its sound gets much thinner and more intense, losing some of its characteristic quality, as it approaches the extreme upper register.

The following passage, one of the most famous solos for the tuba, shows how effective this instrument can sound in its middle and upper registers.

EXAMPLE 10-87. Musorgsky-Ravel, *Pictures at an Exhibition*, "Bydlo," mm. 1–10

CD-3/TR. 87



It takes a great deal of breath to play this largest of all brass instruments; therefore, special care must be taken to write parts that do not tire out the performer. We strongly recommend writing frequent rests in passages.

Articulation and Tonguing

Many different types of articulations at different dynamic levels are possible on the tuba. As on the other brass instruments, all notes within the same slur will be performed automatically in one breath. The following slurred passage, which showcases the tuba's nice, round sound in its middle and higher registers, is played softly.

EXAMPLE 10-88. Mahler, Symphony No. 1, third movement, mm. 15–23

CD-3/TR. 88



Single, double, and triple tonguing can all be executed on the tuba, although double and triple tonguing are not commonly used in standard orchestral literature.

The tuba's ability to play powerful attacks is illustrated in the following passage.

CD-3/TR. 89

EXAMPLE 10-89. Powerful Attacks on the Tuba



The tuba is also capable of playing soft, smooth, lyrical passages, such as the following from Wagner's early opera *Der fliegende Holländer*.

CD-3/TR. 90

EXAMPLE 10-90. Wagner, *Der fliegende Holländer*, Act I, "Die Frist ist um," mm. 175–181



The following faster passages, also containing wide skips, illustrate the tuba's surprising agility, considering its size.

CD-3/TR. 91

EXAMPLE 10-91. Prokofiev, Symphony No. 5, first movement, at 23



CD-3/TR. 92

EXAMPLE 10-92. Ravel, *La Valse*, 5 mm. after 63



The tuba is a great doubler and can reinforce any bass part at both a loud and soft dynamic. Here, the tuba adds a pizzicato-like edge to the tone as it doubles the double basses, which play arco.

EXAMPLE 10-93. Mahler, Symphony No. 6, fourth movement, mm. 178–180 (tuba only)

CD-3/TR. 93



ADDITIONAL PASSAGES FOR STUDY

Gershwin, *An American in Paris*, 3 mm. after [67]
Shostakovich, Symphony No. 7, second movement, mm. 198–216
R. Strauss, *Till Eulenspiegel*, mm. 553–558

Mutes

CD-ROM
CD-3
MUTED TUBA

A single type of mute is available for the tuba. Since the mute is a bit awkward to insert and remove from the bell of the instrument, the composer or orchestrator should allow enough time for the player to do this noiselessly. The following passage for muted tuba takes advantage of the middle and higher portions of the instrument's range.

EXAMPLE 10-94. Muted Tuba

CD-3/TR. 94



Special Effects

Trills

In symphonic literature trills have seldom been written for the tuba, but when called for they are very effective. They can be produced by manipulating the valves.

EXAMPLE 10-95. Wagner, *Die Meistersinger*, Prelude, mm. 158–165

CD-3/TR. 95



Flutter Tonguing

More recent composers have drawn on a variety of special effects, such as this very soft flutter tonguing from Schoenberg's *Erwartung*.

CD-3/TR. 96

EXAMPLE 10-96. Schoenberg, *Erwartung*, m. 426

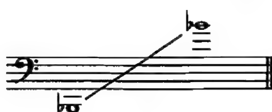


OTHER MEMBERS OF THE TUBA FAMILY

Euphonium and Tenor Tuba

In some places, particularly in the United States, the euphonium replaced Wagner's tenor tuba and has often been used to read the latter's parts. But of late new Wagner tubas have appeared and are being utilized by today's composers (for instance, by Christopher Rouse in his Symphony No. 1). Like the more modern tubas described above, the euphonium is a nontransposing instrument and is notated in the bass clef. Therefore, when reading Wagner tuba parts notated in the treble clef, the euphonium player must transpose down a major 9th.

EXAMPLE 10-97. Range



The euphonium has the same range as the bass trombone, but is constructed like a miniature tuba with a conical bore and flared bell. It has four valves. The euphonium has a very mellow and smooth sound, with none of the pitch problems that plagued the Wagner tubas.

Very few orchestral composers have written specifically for the euphonium. It appears extensively, however, in band and wind ensemble literature, where it doubles or substitutes for the baritone (see below) or is given its own prominent parts. In American orchestras, the following passage is usually performed on the euphonium.

CD-3/TR. 97

EXAMPLE 10-98. R. Strauss, *Don Quixote*, mm. 140–142



ADDITIONAL PASSAGES FOR STUDY

Euphonium:

Grainger, *Sir Eglamore* and *To a Nordic Princess* (throughout)
Harris, *When Jonny Comes Marching Home Again* (throughout)
Kupferman, *Symphony of the Yin-Yang* (throughout)
Ruders, Symphony No. 2 (throughout)

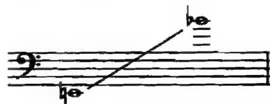
Wagner (Tenor) Tuba:

Bruckner, Symphonies Nos. 7 and 8 (throughout)
C. Rouse, Symphony No. 1 (throughout)
Schoenberg, *Gurrelieder* (throughout)
R. Strauss, *Elektra* and *Alpine Symphony* (throughout)
Stravinsky, *Le Sacre du printemps* (throughout)
Wagner, The *Ring* Cycle, especially *Siegfried*, Act III, Prelude, and *Götterdämmerung*, Act I, scene 1 (directly after the Prelude)

Baritone

Although strictly speaking a band instrument, the baritone is closely related to the euphonium and sometimes even substitutes for it. Its range, however, is the same as that of the tenor trombone. The player manipulates its pitches with three valves.

EXAMPLE 10-99. Range



The baritone is very agile and blends well with all other instruments in the band. You will find excerpts for it in Examples 17-19a and 17-20a.

Ophicleide

This instrument looks very much like a metal bassoon, except that it has a conical tube that flares widely into a bell that is eight inches in diameter. Large holes are cut into the tube, and each of these is covered by a padded disc manipulated by keys similar to those on modern woodwind instruments. Since the mouthpiece is a little more cupped than that of the modern horn, it produces quite a mellow sound, similar to that of a euphonium. It is a nontransposing instrument and is notated in the bass clef.

The tuba has completely replaced this instrument, which performed the bass parts of the brass section throughout the nineteenth century. Berlioz, Mendelssohn, Schumann, Meyerbeer, Verdi, and many other composers of this period wrote for it. One of its last appearances was in Wagner's *Rienzi*. Nowadays, ophicleide parts, if not assigned to the tuba, are given to the bassoon or contrabassoon.

ADDITIONAL PASSAGES FOR STUDY

Trumpet:

Debussy, *La Mer*, third movement, [44]–[45] (muted trumpet)
Franck, Symphony in D minor, first movement, mm. 127–145 (doubles English horn and other woodwinds)
Hovhaness, *Saint Vartan Symphony*, second movement, "Tapor" (three trumpets and percussion)
Piston, Symphony No. 2, first movement, second theme, at [205]
Rimsky-Korsakov, *Le Coq d'or* Suite, first movement, opening
Scriabin, *Poem of Ecstasy*, mm. 95–101, at Allegro non troppo, principal theme
R. Strauss, *Also sprach Zarathustra*, opening

Horn:

Brahms, Piano Concerto No. 2, first movement, mm. 1–5
Brahms, Symphony No. 2, first movement, mm. 2–5 (two horns)
Dvořák, Symphony No. 8, fourth movement, mm. 63–64, 95–96 (horn trills)
Mahler, Symphony No. 3, first movement, mm. 1–23 (eight horns in unison, then *divisi* in extremely low register)
R. Strauss, *Sinfonia domestica*, [71]–[77] (horn in extremely high register)
Stravinsky, *Symphony in Three Movements*, third movement, at [163] (horn glissando)
Wagner, *Der fliegende Holländer*, Overture, mm. 2–15
Wagner, *Das Rheingold*, Prelude, m. 17ff. (eight horns)
Wagner, *Siegfried Idyll*, mm. 259–274 (horn trill at "Lebhaft" in m. 274)

Trumpet and Horn:

Respighi, *Pines of Rome*, first movement, beginning
R. Shchedrin, Symphony No. 2, first and second movements

Trombone:

Berlioz, Requiem, "Hostias" movement, at [74] (pedal tones)
Hindemith, *Mathis der Maler*, first movement, opening
Ravel, *Bolero*, 3 mm. after [10] to [11]
Rimsky-Korsakov, *Russian Easter Overture*, solo at [M]
Wagner, *Rienzi*, Overture, mm. 110–155 (three trombones and tuba)

Tuba:

Berlioz, *Benvenuto Cellini*, Overture, [18]–[19] (very high tuba part)
Chávez, Symphony No. 6, third movement, beginning
Gershwin, *An American in Paris*, 4 mm. after [67] to [68]
Respighi, *Fountains of Rome*, fourth movement, [11]–[14]
Respighi, *Pines of Rome*, last movement, 4 mm. before [21] (trombones, horns, trumpets, tuba)
Shostakovich, Symphony No. 1, third movement, [3] to 4 mm. after [6]
Stravinsky, *Petrushka*, Fourth Tableau, "Dance of the Peasant and the Bear"

Large Brass Ensembles in Symphonic Works:

Berlioz, Requiem, "Dies irae," at [18] (four brass "orchestras")
Janáček, *Sinfonietta*, first movement
S. Ran, Symphony No. 1, first movement, from [E] to [I]
Stravinsky, *Le Sacre du printemps* (throughout)
Wagner, *Siegfried*, opening of Act II (horns, tenor tubas, bass tubas, and contrabass tuba)

11

SCORING FOR BRASS, AND BRASS COMBINED WITH STRINGS AND WINDS

Even though the brass choir contains some of the oldest instruments in Western culture, not until the latter part of the nineteenth century did orchestral composers start to explore it to its greatest potential. This was perhaps due to the reluctance of many mid-nineteenth-century composers to accept the mechanical advances being made to the construction of the trumpet and horn. Or perhaps it was due to their preference for the sound of natural instruments; Wagner and Brahms, for instance, used natural trumpets and horns in quite a few works even though instruments with valves were available to them. Since the turn of the twentieth century the brass choir has certainly gained much wider acceptance.

This chapter focuses on how to employ the orchestral brass section to its greatest advantage. First we will look at a number of scores that trace the brass section's development from a solo choir in the Renaissance through its more selective uses in the Baroque and discreet appearances in the Classical and early Romantic orchestras, to its full exploitation starting around the turn of the twentieth century. Then we will discuss the four major functions of the brass choir:

1. as a homophonic unit (alone or in combination with other orchestral choirs);
2. as a presenter of melody (as a soloist, in combination with other instruments, or as an independent voice in a contrapuntal texture);
3. as a builder of orchestral climaxes;
4. as a provider of coloristic effects (muted, jazzy, or more novel sounds and techniques).

At the outset we must warn composers and orchestrators not to overuse this powerful sound resource, for it can easily overshadow the rest of the orchestra.

EARLY USES OF THE BRASS CHOIR

Before the Classical period it is virtually impossible to establish the number or kinds of brass instruments in common use. We know that during the Renaissance the doublings of brass instruments depended on the size of the room, hall, or church and the availability of players. For instance, the Interlude from *In ecclesiis* by Giovanni Gabrieli (1557–1612), written to be performed in St. Mark's Cathedral in Venice, was probably played by three trumpets and three trombones; this group may have been doubled by an identical group, each playing from a different balcony.

CD-4/TR. 31

EXAMPLE 11-1. Gabrieli, *In ecclesiis*, mm. 51–67

Tpt. 1, 2
Tpt. 3
Trb.

During the Baroque period two or three horns were usually used, most often with three trumpets, which were almost always coupled with timpani; the trombones were used in threes. This may sound like a large complement, but except for some "battle pieces," outdoor works such as Handel's *Water Music*, and a few operatic scenes, the full brass section rarely if ever played together at the same time. Instead, these instruments, if they were used in the same work, usually played in different movements. Therefore, if you hear a Baroque work with trumpets, horns, and trombones playing together in unison or octaves, it is probably an arrangement, not an original. Keep in mind that the clarino style of trumpet playing was very much in vogue during this period, as was the high register of the horn.

The noble opening of the *Royal Fireworks Music* by Handel, with its homophonic texture, resembles the Gabrieli excerpt given above; notice, however, the

doublings of the three trumpet parts by the three horns. Later on the trumpets and the horns play in antiphony, but they ultimately return to the homophonic texture used at the beginning of the work, shown here. In the score given in Example 11-2 all instruments are notated at actual concert pitch; originally both horns and trumpets were D instruments, the horn sounding an octave below the trumpets.

EXAMPLE 11-2. Handel, *Royal Fireworks Music*, Overture, mm. 1–19

CD-4/TR. 32

1
Adagio

Ob. 1
Ob. 2
Ob. 3
Bsn. 1
Bsn. 2
Cbsn.
Hn. 1
Hn. 2
Hn. 3
Tpt. 1
Tpt. 2
Tpt. 3
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

7

Ob. 1
Ob. 2
Ob. 3
Bsn. 1
Bsn. 2
Cbsn.
Hn. 1
Hn. 2
Hn. 3
Tpt. 1
Tpt. 2
Tpt. 3
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

13

Ob. 1
Ob. 2
Ob. 3
Bsn. 1
Bsn. 2
Cbsn.
Hn. 1
Hn. 2
Hn. 3
Tpt. 1
Tpt. 2
Tpt. 3
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

At the height of the Classical period trombones were not included in most symphonies, although they were still standard in opera and church orchestras. Even as late as his Symphony No. 5, Beethoven waits until the final movement before introducing the trombones, which, coming after a marvelously suspenseful buildup, contribute to the tremendous musical climax at the start of the movement. Notice how much more versatile the trombones are than the horns and trumpets, which, starting in measure 5, get stuck on tonic and dominant notes once the initial fanfare chord is over.

CD-4/TR. 33

EXAMPLE 11-3. Beethoven, Symphony No. 5, fourth movement, mm. 1–8

Allegro (𝅗𝅥 = 84)

Picc.
Fl.
Ob.
C Cl.
Bsn.
Cbsn.
C Hn.
C Tpt.
Alt. Trb.
Ten. Trb.
Bs. Trb.
Timp.

Allegro (𝅗𝅥 = 84)

Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

This is certainly a most effective use of the brass choir. But when the brass are scored in such a vigorous manner continuously throughout a work, the resulting sound gets bombastic and tiresome; it also robs the climactic passages of their full power and majesty.

DOUBLING OF BRASS INSTRUMENTS WITHIN THE MODERN ORCHESTRA

With the establishment of the orchestral brass section in the late Classical period, two horns, two trumpets, and three trombones became the norm; the tuba was added just a bit later. Subsequently the section grew to four horns, the rest of the complement remaining the same; this resulted in a section capable of playing a chord with nine different notes. When the brass section expanded to four horns, three trumpets, three trombones, and tuba, as is usual today, chords containing eleven notes became available. Thus, in typical four-note chords, quite a lot of doubling is used.

Here are some chords successfully scored for brass; all the notes are at concert pitch. Notice that the techniques of juxtaposing, interlocking, enclosing, and overlapping, discussed in Chapter 8 for the woodwind choir (pp. 253–254), also apply here:

EXAMPLE 11-4. Usual Doublings of the Brass Choir within the Modern Orchestra

CD-4/TR. 34

What and when to double often depends on the dynamic level of the passage: when the dynamic is *mf* or softer, each brass instrument can be assigned a separate pitch, and depending on the registral placement, the chord will sound well balanced. When the dynamic is louder than *mf*, it is advisable to double the horns, which when played in unison will roughly equal the sound of one trumpet or one trombone. This rule, however, does not apply if the trumpet is in a low register, but it is generally a good one to keep in mind. The following examples of doublings are in a transposed score.

CD-4/TR. 35

EXAMPLE 11-5. How Dynamic Levels Affect Doubling and Spacing

Transposed Score

(weaker) (very dark)

4 F Hn.

2 B♭ Tpt.

Trb. 1
Trb. 2

Trb. 3
Tba.

ff mf p

HOMOPHONIC WRITING FOR THE BRASS CHOIR

The orchestral brass choir can be used homophonically, either by itself or in combination with the string and woodwind choirs through the use of doubling.

Homophonic Settings within the Brass Choir Itself

Stravinsky, *J. S. Bach Chorale Varations*

In his *J. S. Bach Chorale Varations* Stravinsky orchestrates a Bach Christmas carol. His choice of instruments, three trumpets and three trombones, is reminiscent of seventeenth-century brass *Turm-Musik** (tower music). The very interesting voice leading, which is sometimes Bach's and sometimes Stravinsky's, is due partly to the independence of all six parts. Stravinsky, who added two other parts to Bach's original four-part chorale, created thick brass writing, perhaps simulating a combination of stops on an organ. If played well, this passage is very effective, but the last phrase can easily sound muddy.

*Many seventeenth- and eighteenth-century composers, such as Johann Christoph Pezel, Johann Pachelbel, J. S. Bach, and Anton Reiche, wrote *Turm-Musik*, played from the tower of the church as the congregation left the building at the end of the service.

EXAMPLE 11-6. Stravinsky, *J. S. Bach Chorale Variations on "Vom Himmel hoch,"* mm. 1–8

CD-4/TR. 36

If composers are asked to transcribe music from the Baroque era, they should realize, as Stravinsky did, that they must think, feel, and hear as if they were writing in the Baroque idiom. We shall look at another example from these variations later in the chapter.

Homophonic Settings of Brass Combined with Other Choirs

Let us now examine some typical homophonic passages involving the brass and at least one other orchestral section. Carefully note spacing, voice leading, and doublings; you might wish to use different-colored pencils to mark the doublings and make piano reductions to ascertain which pitches are essential and how these have been doubled. Always be aware of the melody, or those melody notes the composer wishes to stress; try to figure out the reasons behind the composer's choices as well as how he or she carries these emphases off.

Bruckner, Symphony No. 7

In this original version of the last movement from Bruckner's Seventh Symphony, a huge climax is effected by the brass, which dominate the heavily scored homophonic texture of this passage and lend it tremendous weight. Notice, in measures 191–198, where the brass choir is doubled at the unison or octave by the strings or woodwinds; this occurs for some pitches but not all, giving the effect of flickering tone color. The quasi-doubling of the excerpt's opening measures returns in measure 210 for one measure, becoming strict octave doubling in measure 211 as the climax is built. Study these measures carefully; the bass tubas are written in the old-fashioned system and therefore must be read in the following ways: B♭ tenor tubas a major 9th below, F bass tubas a perfect 12th below, and CC contrabass tuba at pitch.

EXAMPLE 11-7. Bruckner, Symphony No. 7, last movement, mm. 191–212

CD-4/TR. 37

Allegro ma non troppo

191

Fl. 1
Fl. 2
Ob. 1, 2
A Cl. 1
A Cl. 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
F Tpt. 3
Alt., Ten. Trb.
Bs. Trb.
B♭ Ten. Tba. 1, 2
F Bs. Tba. 1, 2
Cbs. Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ff marc.
a 2
(schwer)
marc.
P
gestrichen
arco
ff sempre marcato

196

Q Breit und wuchtig

Fl. 1
Fl. 2
Ob. 1, 2
A Cl. 1
A Cl. 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
F Tpt. 3
Alt., Ten. Trb.
Bs. Trb.
B♭ Ten. Tba. 1, 2
F Bs. Tba. 1, 2
Cbs. Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

(schwer)
sempre ff
ff marc.
a 2

201

Fl. 1
Fl. 2
Ob. 1, 2
A Cl. 1
A Cl. 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
F Tpt. 3
Alt., Ten. Trb.
Bs. Trb.
B♭ Ten. Tba. 1, 2
F Bs. Tba. 1, 2
Cbs. Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

marc. sempre

marc.

a 2

205

Fl. 1
Fl. 2
Ob. 1, 2
A Cl. 1
A Cl. 2
Bsn. 1, 2
a 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
marc.
F Tpt. 3
marc.
Alt., Ten. Trb.
Bs. Trb.
B♭ Ten. Tba. 1, 2
F Bs. Tba. 1, 2
Cbs. Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

209 R immer breiter

Fl. 1
Fl. 2
Ob. 1, 2
A Cl. 1
A Cl. 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
F Tpt. 3
Alt., Ten. Trb.
Bs. Trb.
B♭ Ten. Tba. 1, 2
F Bs. Tba. 1, 2
Cbs. Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

fff marc.

a 2

Elgar, *Enigma Variations*

The brass again predominate in this powerful, choralelike ending to "W.M.B." from Elgar's *Enigma Variations*. Study the doublings carefully; those at the octave and double octave are very effective in obtaining such a massive sound.

CD-4/TR. 38

EXAMPLE 11-8. Elgar, *Enigma Variations*, "W.M.B.," mm. 25–32

Musorgsky-Ravel, *Pictures at an Exhibition*, "The Great Gate of Kiev"

In the famous opening of this last movement from *Pictures at an Exhibition*, Ravel fills out and doubles the bass parts with two bassoons and contrabassoon, leaving Trombones 1 and 2 to play in their more brilliant range. The grace notes in Musorgsky's original piano part, which emphasize the piano's bass range, are disregarded in Ravel's orchestration; they are superfluous in the orchestral version, given the strength of the tuba and contrabassoon. The timpani, which usually support the roots of the chords, basically have a pedal on the dominant pitch, B♭, instead. This pedal is finally resolved when the winds come in at measure 13 and E♭ predominates in the timpani.

EXAMPLE 11-9. Musorgsky-Ravel, *Pictures at an Exhibition*, "The Great Gate of Kiev," mm. 1–17

a. MUSORGSKY'S ORIGINAL PIANO VERSION

Maestoso

Pno.

Pno.

b. RAVEL'S ORCHESTRATION

CD-4/TR. 39

Allegro alla breve. Maestoso. Con grandezza

Bsn. 1, 2

Cbsn.

F Hn. 1, 2

F Hn. 3, 4

C Tpt. 1, 2, 3

Trb. 1, 2

Trb. 3
Tba.

Timp.

Bs. Dr.

6

Bsn. 1, 2

Cbsn.

F Hn. 1, 2

F Hn. 3, 4

C Tpt. 1, 2, 3

Trb. 1, 2

Trb. 3
Tba.

Timp.

12

Fl. 1, 2, 3

Ob. 1, 2, 3

B♭ Cl. 1, 2

Bs. Cl.

Bsn. 1, 2

Cbsn.

F Hn. 1, 2

F Hn. 3, 4

C Tpt. 1, 2, 3

Trb. 1, 2

Trb. 3
Tba.

Timp.

Bs. Dr.

USING THE BRASS CHOIR TO PRESENT THE MELODY

There are, of course, hundreds of examples in which brass instruments are used as soloists, either alone or in combination with other instruments. Some of these solos were excerpted in the previous two chapters. In Chapter 10 we also examined examples for multiple trumpets, horns, or trombones. In this section we will explore the entire brass section used as soloist, whether alone, doubled by instruments of other orchestral sections, or within a contrapuntal texture.

As Soloist

Hindemith, *Nobilissima visione*

In the third movement of his *Nobilissima visione*, Hindemith uses the brass in unison and octaves, a technique that creates a strong and penetrating sound. This powerful presentation of the passacaglia theme features four F horns and two C trumpets playing in octaves, with three trombones doubling the horns in unison. This doubling results in a dark sound, since neither the trumpets nor horns ever go into their higher ranges. Only the trombones are scored in their upper range, which adds strength and nobility to the sound. If Hindemith had wanted an extremely bright sound he could have transposed the passage up a 3rd or 4th, having the trumpets and horns play in a high register. Instead, whatever brilliance this passage actually conveys results from the unison horns and trombones.

EXAMPLE 11-10. Hindemith, *Nobilissima visione*, third movement (Passacaglia), mm. 1–6

CD-4/TR. 40

Hindemith saves the tuba until the second variation, at [34] (score not included here), where it gives a fresh new color to the theme in its rendition two octaves

lower. In subsequent repetitions of the theme Hindemith sometimes doubles the brass with other members of the orchestra, introducing ever new sheens of color.

Using Four Unison Horns

The presentation of a melody by four horns in unison has been a favorite device to achieve a brilliant musical climax since Wagner, Mahler, and Richard Strauss (see Example 10-12, from *Don Juan*). However, we often wince when horn players crack during such wonderful passages. We quote from Gunther Schuller, who as composer, orchestrator, and horn player, sheds some light on this problem:

> When more than one horn player attempts a high passage at a loud dynamic level, unless their intonation is perfect, a curious phenomenon takes place. The fractional intonational differences set up . . . vibrations so intense in the immediate vicinity of the players . . . that it becomes virtually impossible for any one of the players to sustain his note. That is the reason why one hears so many cracked notes in high register unison horn passages. It is therefore advisable to orchestrate such passages, whenever possible, for first and third horn alone, or to reinforce the two horns with one trumpet.
>
> The acoustical explanation of this disturbing phenomenon is that high notes on a horn create such intensely vibrating air columns that another player's lips and instrument, if in the immediate vicinity, are *physically* affected. If the same unison passage were attempted with each player sitting ten feet apart, the problem would . . . be eliminated.*

In Combination with Other Instruments

We shall now look at a few instrumental combinations to illustrate the wide variety of colors a composer or orchestrator can assign to the melody. You may wish, from this point on, to reduce some of the scores for either piano or piano four hands so that you notice every doubling. We suggest you do this for Example 11-15, a rather easy example, and Example 11-18, a harder one.

R. Strauss, *Don Quixote*

The horn and cello often double on long, sustained melodies. In Example 11-11, the solo cello line is doubled by the first four horns, whose entrances are staggered, an effect that gives the melody added articulation. Notice that in this example the horns are notated in the old style, putting them in the bass clef; the written pitches will sound a perfect 4th higher.

---

*Gunther Schuller, *Horn Technique* (Oxford University Press, 1962), pp. 82–83.

EXAMPLE 11-11. R. Strauss, *Don Quixote*, mm. 189–193

CD-4/TR. 41

Allegro

189

Picc.
Fl. 1, 2
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1
B♭ Cl. 2
3 Bsn.
F Hn. 1, 2
F Hn. 3, 4
F Hn. 5, 6
D Tpt. 1, 2
D Tpt. 3, 4
3 Trb.
B♭ Ten. Tba.
Bs. Tba.
Timp.
Cymb.
Hp.
Vln. solo 1
Vln. solo 2
Vln. solo 3
Vln. 1
Vln. 2
Vla.
Vlc. solo
Vlc.

glissando

glissando

Weinberger, Polka and Fugue from *Schwanda the Bagpiper*

CD-4/TR. 42

EXAMPLE 11-12. Weinberger, Polka and Fugue from *Schwanda the Bagpiper*, mm. 185–191

Allegro

185

Fl. Picc. Ob. A Cl. Bsn. F Hn. C Tpt. Trb. Tba. Timp. B Tpt. Org. Ped. Vln. 1 Vln. 2 Vla. Vlc. D.B.

a 2 · ff · unis. · 1. 2. 3. 4. a 4 in Si (H) dietro la scena* · fff

*Trumpets in B offstage.

189

Fl.
Picc.
Ob.
a 2
A Cl.
Bsn.
F Hn.
C Tpt.
Trb.
3
Tba.
Timp.
B Tpt.
Org.
Ped.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

In the Weinberger excerpt given above (Example 11-12), C trumpets double the oboes, a very common combination. Both instruments have a sharp edge to their tone, and even though all the instruments, including an organ, are playing, the melody can still be heard.

Prokofiev, Symphony No. 5

At the beginning of the third movement to his Symphony No. 5 Prokofiev gives a heavier feeling to the rather soft bass melody by doubling it with the tuba. This also strengthens and darkens the sound.

CD-4/TR. 43

EXAMPLE 11-13. Prokofiev, Symphony No. 5, third movement, mm. 1–3

Wagner, *Siegfried*

This dramatic opening presents a combination of different articulations: the solo tuba, which articulates every note, is doubled by bass clarinet and bassoons, which slur the melody.

EXAMPLE 11-14. Wagner, *Siegfried*, Prelude to Act III, mm. 1–7

CD-4/TR. 44

Lebhaft, doch gewichtig.

1

B♭ Bs. Cl.

Bsn. 1, 2

Bsn. 3

3 Trb.

2 E♭ Ten. Tba.

(sehr gehalten, aber nicht gebunden.)

B♭ Bs. Tba. 1

B♭ Bs. Tba. 2

Cbs. Tba.

Timp.

(stacc.)

Vln. 1

(stacc.)

Vln. 2

(stacc.)

Vla.

(sehr gehalten)

Vlc. D.B.

p cresc. f

Schubert, *Rosamunde*

In Example 11-15 a most popular doubling—trombones with bassoons, violas, cellos, and double basses—occurs starting in measure 114; here the trombones contribute to the powerful effect of the tutti that starts in measure 114. After that, Schubert orchestrates a beautiful diminuendo by dropping out the first two trombones and leaving only the third to bolster the lower strings.

EXAMPLE 11-15. Schubert, *Rosamunde*, Entr'acte I, mm. 106–123

CD-4/TR. 45

106 **Allegro molto moderato**

Fl. 1, Fl. 2, Ob. 1, Ob. 2, A Cl. 1, A Cl. 2, Bsn. 1, Bsn. 2, D Hn., Trb. 1, 2, Trb. 3, Vln. 1, Vln. 2, Vla., Vlc., D.B.

f *pp* *ff*

115

Fl. 1
Fl. 2
Ob. 1
Ob. 2
A Cl. 1
A Cl. 2
Bsn. 1
Bsn. 2
E Tpt.
Trb. 1, 2
Trb. 3
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2
f
p
pp

Liszt, *Les Préludes*

Tuba, plus trombones, bassoons, cellos, and double basses constitute one of the most powerful combinations in the symphony orchestra.

EXAMPLE 11-16. Liszt, *Les Préludes*, mm. 405–410

CD-4/TR. 46

Tchaikovsky, *1812* Overture

Another powerful combination—trombones, tuba, horns, bassoons, and lower strings—presents the Russian national anthem ("God Save the Tsar") in the bass register against heavily orchestrated counterpoint. Compare the different textures of Examples 11-16 and 11-17.

EXAMPLE 11-17. Tchaikovsky, *1812* Overture, mm. 386–398

CD-4/TR. 47

Allegro giusto

386

Band*

Picc.

Fl.

Ob.

B♭ Cl.

Eng. Hn.

Bsn.

F Hn.

B♭ Cor.

E♭ Tpt.

Tbn.
Tba.

Timp.

Sn. Dr.

Cymb.

Bs. Dr. 1

Bs. Dr. 2

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

fff

*To be played by extra available brass instruments.

392

Band

Picc.

Fl.

Ob.

B♭ Cl.

Eng. Hn.

Bsn.

F Hn.

B♭ Cor.

E♭ Tpt.

Tbn.
Tba.

Timp.

Sn. Dr.

Cymb.

Bs. Dr. 1

Bs. Dr. 2

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

Wagner, *Lohengrin*

In this extraordinary spot in *Lohengrin*, the choralelike melody played by the trumpets, trombones, and tuba is first doubled by the strings, then by the woodwinds, at the end of which a diminuendo leads to a gorgeous *pianissimo* chord. We suggest making a piano reduction of this score in order to identify all the doublings, so characteristic of Wagner's orchestration technique. In your reduction, be sure to label the principal voices, as well as the instruments that double these voices and places where the doubling is taken up by another instrument or instruments.

CD-4/TR. 48

EXAMPLE 11-18. Wagner, *Lohengrin*, Prelude to Act I, mm. 50–58

Andante molto

Fl.
Ob.
Eng. Hn.
A Cl.
A Bs. Cl.
Bsn.
E Hn.
D Hn.
D Tpt.
Trb.
Tba.
Timp.
Cymb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

cresc.
sehr gehalten
trem.

54

a 2

Fl.

Ob.

Eng. Hn.

A Cl.

A Bs. Cl.

Bsn.

E Hn.

D Hn.

D Tpt.

Trb.

Tba.

Timp.

Cymb.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

ff dim. p pp più p f

FOR FURTHER STUDY

Copland, *Appalachian Spring,* [59]–[61]
Prokofiev, *Lieutenant Kijé,* "Troika," at [51]
Stravinsky, *Pulcinella,* [85]–[94]

CONTRAPUNTAL WRITING FOR THE BRASS CHOIR

We turn now to excerpts that illustrate several ways in which composers have used members of the brass choir in a contrapuntal setting, either with instruments from other orchestral sections or within the brass section itself. Some of the excerpts are in strict imitation, others are in a freer style.

Berlioz, *Roman Carnival Overture*

The effectiveness of the canon in this excerpt is due as much to color contrasts as to registral differences, which separate the various statements of the canonic subject. This subject is first stated by the two bassoons in unison, then by the three trombones, and later by flutes and oboes in octaves (notice that six measures earlier the flutes and oboes anticipate their statement by playing a slight intervallic variation of the theme in unison).

CD-4/TR. 49

EXAMPLE 11-19. Berlioz, *Roman Carnival Overture*, mm. 298–344

313

Fl. 1
Ob.
Bsn.
Trb. 1, 2
Trb. 3 Tba.
Vln. 1
Vln. 2
Vlc.

1.
mf
a 2
mf
p
p
p
p

320

Fl. 1
Ob.
B♭ Cl.
Bsn.
Trb. 1, 2
Trb. 3 Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p
p
mf
poco cresc.
a 2
p
p
poco cresc.
p
poco cresc.
poco cresc.
pizz.
p
poco cresc.

327

Fl. 1

crescendo poco a poco

Ob.

B♭ Cl.

Bsn.

crescendo poco a poco

C Hn.

p

Trb. 1, 2

poco cresc.

Trb. 3
Tba.

Vln. 1

p

crescendo poco a poco

Vln. 2

crescendo poco a poco

Vla.

crescendo poco a poco

Vlc.

crescendo poco a poco

arco

D.B.

p

crescendo poco a poco

334

Fl. 1

Picc.

Ob.

B♭ Cl.

Bsn.

C Hn.

Trb. 1, 2

Trb. 3
Tba.

Timp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

mf

cresc. molto

340

Fl. 1
Picc.
Ob.
a 2
B♭ Cl.
Bsn.
cresc. molto
C Hn.
cresc. molto
E Hn.
cresc. molto
D Tpt.
A Cor.
Trb. 1, 2
cresc. molto
Trb. 3 Tba.
Cymb.
Tamb.
Trgl.
Timp.
cresc. molto
Vln. 1
cresc. molto
Vln. 2
Vla.
Vlc.
D.B.
ff

Stravinsky, *J. S. Bach Chorale Variations*

In Variation IV of this work, in imitative counterpoint, Stravinsky simulates the sound of the many stops on a Baroque organ by using the winds and brass (trumpets, trombones, flutes, and bassoons) to play the canonic voices; the violas, cellos, double basses, and lower bassoons double the chorus. Even though the trumpets are not playing in a high tessitura, they play a clarino-like part. Compare Bach's original version (given in smaller noteheads below the score) with Stravinsky's rendition. Notice that Stravinsky transposed this variation to give the orchestra a more brilliant sound.

EXAMPLE 11-20. Stravinsky, *J. S. Bach Chorale Variations on "Vom Himmel hoch,"* Variation IV, mm. 1–8

CD-4/TR. 50

Hindemith, *Symphonic Metamorphoses*

Here is a jaunty fugato for the entire brass choir, ending when the timpani present their version of the fugue subject at measure 192, which is punctuated by the brass choir starting in measure 195. This punctuation using brass instruments is a favorite device of Hindemith, as well as of other composers. Notice that all the instruments are in their best registers, which allows the subject to come through clearly every time it is heard.

EXAMPLE 11-21. Hindemith, *Symphonic Metamorphoses*, second movement, mm. 160–195

CD-4/TR. 51

160 Lively

Hn. 1 2 3

Tbn. 1 2 3

166

Hn. 1

Hn. 2

Hn. 3

Tpt. 1

Tpt. 2

Tbn. 1

Tbn. 2

Tbn. 3

Tba.

172

Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1
Tpt. 2
Tbn. 1
Tbn. 2
Tbn. 3
Tba.

177

Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1
Tpt. 2
Tbn. 1
Tbn. 2
Tbn. 3
Tba.

182

Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1
Tpt. 2
Tbn. 1
Tbn. 2
Tbn. 3
Tba.

187

Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1
Tpt. 2
Tbn. 1
Tbn. 2
Tbn. 3
Tba.

Bartók, *Concerto for Orchestra*

Another fugato, one of the best-known brass passages in twentieth-century orchestral literature, comes from the first movement of Bartók's *Concerto for Orchestra*. The trombones and trumpets present the main theme, which is then inverted by the horns and the rest of the brass section starting in measure 342. Here, as in many other examples in this chapter, the composer equates the strength of two horns in unison with that of one trumpet or one trombone. The cumulative effect of the *stretto* in measures 363–386 is especially thrilling.

EXAMPLE 11-22. Bartók, *Concerto for Orchestra,* first movement, mm. 316–387 (brass only in mm. 316–339 and 380–387)

CD-4/TR. 52

334

Fl. 1, 2, 3
Ob. 1, 2, 3
B♭ Cl. 1, 2, 3
Bsn. 1
Bsn. 2, 3
Hn. 1, 3
Hn. 2, 4
C Tpt. 1
C Tpt. 2
C Tpt. 3
Trb. 1
Trb. 2
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ff
a 2
f, *ben marc.*
f

343

Fl. 1, 2, 3

Ob. 1, 2, 3

B♭ Cl. 1, 2, 3

Bsn. 1

Bsn. 2, 3

Hn. 1, 3

Hn. 2, 4

C Tpt. 2

f, ben marc.

C Tpt. 3

mf

Trb. 1

Trb. 3

mf

Timp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

352

Hn. 1, 3
C Tpt. 1
C Tpt. 2
C Tpt. 3
Trb. 2

f, *ben marc.*
f, *ben marc.*

361

Hn. 1, 3
C Tpt. 1
C Tpt. 2
C Tpt. 3
Trb. 1
Trb. 2
Trb. 3

marc.
marc.
f, *ben marc.*
f, *marc.*
marc.
f, *marc.*

370

C Tpt. 1
C Tpt. 2
C Tpt. 3
Trb. 1
Trb. 2
Trb. 3

379

Fl. 1, 2, 3
Ob. 1, 2, 3
B♭ Cl. 1, 2, 3
Bsn. 1
Bsn. 2, 3
Hn. 1, 3
Hn. 2, 4
C Tpt. 1
C Tpt. 2
C Tpt. 3
Trb. 1
Trb. 2
Trb. 3 Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2 a 3 a 3 a 2 a 2
ff
cresc.
f cresc.
non div.
p cresc.
mf cresc.
non div.
p cresc.
non div.
f *ff*

Schoenberg, *Five Pieces for Orchestra*

In the virtuosic passage from the first of Schoenberg's *Five Pieces for Orchestra* (Example 11-23), even though all the brass instruments use straight mutes they are expected to play loudly, except for the ***ffpp*** at measure 73. Notice how the independent lines of the trombones, trumpets, and winds work together; notice also the exuberant horn calls. The flutter tongue at the end is quite a surprise after all that counterpoint.

As an orchestrator Schoenberg gave significant parts to comparatively neglected members of the orchestra, such as the tuba, double bass, contrabassoon, and even mandolin. You may wish to examine his *Gurrelieder*, his opera *Erwartung*, and the entire *Five Pieces for Orchestra* in this light.

EXAMPLE 11-23. Schoenberg, *Five Pieces for Orchestra*, No. 1, "Vorgefühle," mm. 57–77

CD-4/TR. 53

Molto Allegro

Picc. 1, 2
Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
A Cl. 1, 2
D Cl. 3
B♭ Bs. Cl.
A Cbs. Cl.
Bsn. 1, 2, 3
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
B♭ Tpt. 1, 2
B♭ Tpt. 3
Trb. 3, 4
Bs. Tba.
Xyl.
Timp.
Vln. 1
Vln. 2
Vla. 1, 2
Vla. 3, 4
Vlc. 1, 2
Vlc. 3, 4
D.B.

alle 4 mit Dämpfer

mit Dämpfer, so stark wie möglich

hart

alle arco

arco

der fl. Sp. pizz.

pizz.

zu 2 1, 3

2, 4

64

Picc. 1, 2
Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
A Cl. 1, 2
D Cl. 3
B♭ Bs. Cl.
A Cbs. Cl.
Bsn. 1, 2, 3
Cbsn.
F Hn. 1, 3
F Hn. 2, 4
B♭ Tpt. 1, 2
Trb. 1, 2
Xyl.
Vln. 2
Vla.
Vlc. 1, 2
Vlc. 3, 4
D.B.

zu 2
mit Dämpfer
3 fach get.

70

Picc. 1, 2
Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
A Cl. 1, 2
D Cl. 3
B♭ Bs. Cl.
A Cbs. Cl.
Bsn. 1, 2, 3
Cbsn.
F Hn. 1, 3
F Hn. 2, 4
B♭ Tpt. 1, 2
Trb. 1, 2
Xyl.
Vln. 2
Vla.
Vlc.
D.B.

73

rit.

Picc. 1, 2
Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
A Cl. 1, 2
D Cl. 3
B♭ Bs. Cl.
A Cbs. Cl.
Bsn. 1, 2, 3
Cbsn.
F Hn. 1, 3
F Hn. 2, 4
B♭ Tpt. 1, 2
Trb. 1, 2
Trb. 3, 4
Bs. Tba.
Xyl.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

zu 3
flatterzunge
zu 2
mit Dämpfer
mit Dämpfer
fffpp
immer pp
mit Dämpfer
rasch anschwellend
flatterzunge
flatterzunge
fpp
immer pp
unis.
fff
f
mf

CLIMACTIC USES OF THE BRASS CHOIR

Everyone is familiar with the use of brass instruments to effect a musical climax. Composers have drawn on a variety of techniques to achieve the climactic entrance of brass instruments. We give three examples here.

Through Holding Back

One of the most successful ways to build an orchestral climax is by holding back the use of certain instruments in order to save a certain color for a specific event. For instance, in Example 11-24 Schubert gives the closing theme of the exposition an entirely new hue by assigning it to the trombones, who play *pianissimo*. Until this point the trombones have been used only to double lines or sustain chords. This new trombone melody adds an aura of mystery, coming in during a very quiet moment in the musical texture. The trombones again state this theme at the close of the recapitulation, which helps to clarify the movement's sonata form.

EXAMPLE 11-24. Schubert, Symphony No. 9, first movement, mm. 198–232

CD-4/TR. 54

204

2 Fl.
2 Ob.
2 C Cl.
2 Bsn.
2 C Hn.
Alt. Trb.
Ten. Trb.
Bs. Trb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

210

2 Fl. cresc. poco a poco
2 Ob.
2 C Cl. cresc. poco a poco
2 Bsn. cresc.
2 C Hn.
Alt. Trb.
Ten. Trb. a 2 cresc.
Bs. Trb. cresc.
Vln. 1 arco cresc. poco a poco
Vln. 2 cresc.
Vla. cresc. poco a poco
Vlc. cresc. poco a poco
D.B. arco cresc. poco a poco

216

2 Fl.
2 Ob.
2 C Cl.
2 Bsn.
poco a poco
2 C Hn.
cresc. poco a poco
Alt. Trb.
Ten. Trb.
poco a poco
Bs. Trb.
poco a poco
Vln. 1
Vln. 2
poco a poco
Vla.
Vlc.
D.B.

222

2 Fl.
2 Ob.
2 C Cl.
2 Bsn.
2 C Hn.
Alt. Trb.
Ten. Trb.
Bs. Trb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

228
2 Fl.
2 Ob.
2 C Cl.
2 Bsn.
2 C Hn.
2 C Tpt.
Alt. Trb.
Ten. Trb.
Bs. Trb.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Through Alternating between Orchestral Choirs

In the following example the brass alternate with the other orchestral choirs. The climax is played mainly by the strings and winds (notice that the horns are treated as part of the woodwind section). Franck uses trumpets and cornets, a typical French procedure, but today the trumpets usually play all the parts.

EXAMPLE 11-25. Franck, Symphony in D minor, third movement, mm. 74–87

CD-4/TR. 55

74 Allegro

Eng. Hn.
Cl.
Bs. Cl.
Bsn.
F Tpt.
A Cor.*
Trb. 3, Tba.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p molto espress.

81

Fl. Ob. Eng. Hn. Cl. Bs. Cl. Bsn. F Hn. F Tpt. A Cor. Trb. 3, Tba. Vln. 1 Vln. 2 Vla. Vlc. D.B.

a 2 f molto sosten.

Through Repetition

Although many have criticized him for overusing this effect, Tchaikovsky was a master builder of climaxes. In the following example Tchaikovsky has already reached a triple *fortissimo* climax in measure 278, where he reintroduces the movement's opening trumpet flourish for the third time, this time with a new, agitated ornamentation of the top woodwind line by the strings. This texture breaks off in measure 282, and the strings dwindle down to the cellos and basses only. Then suddenly, a huge tutti begins the recapitulation section of the

movement, where the composer adds, in addition to the timpani roll, a powerful new thematic element played by the trombones. Their slower melody sounds like a cantus firmus, and is pitted contrapuntally against other fragments that were heard previously; here they are played by the winds and upper strings and supported by the other brass instruments.

EXAMPLE 11-26. Tchaikovsky, Symphony No. 4, first movement, mm. 278–290 CD-4/TR. 56

280

Fl.
Ob.
Cl.
Bsn.
Hn.
Tpt.
Ten. Trb.
Bs. Trb., Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

282

Fl.
Ob.
Cl.
Bsn.
Hn.
Tpt.
Ten. Trb.
Bs. Trb., Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

fff

285

a 2

Fl.
Ob.
Cl.
a 2
Bsn.
Hn.
Tpt.
a 2
Ten. Trb.
Bs. Trb., Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

There are almost as many instances of this technique as there are works in the orchestral repertoire; we shall examine some other works that achieve climaxes through repetition in Chapter 14.

USING THE BRASS CHOIR TO PROVIDE A COLORISTIC EFFECT

Many special effects written for instruments of the brass choir are relatively new and often are unique to a particular composer's repertoire. In this section we will examine three taken from jazz, and several others taken from a variety of sources.

Jazz Effects

Use of the Wa-Wa (Harmon) Mute

Though the wa-wa mute was initially employed only in jazz, it began to be used in a great deal of American orchestral music throughout the latter part of the twentieth century. Here, this mute is used by the trumpet as well as the trombone, in a work originally written for jazz band and later transcribed for orchestra.

CD-4/TR. 57

EXAMPLE 11-27. Gershwin, *Rhapsody in Blue* (original version for the Whiteman Band), mm. 131–137

Use of the Derby Mute

Gershwin's major contribution was in the field of jazz, and when he wrote for the concert hall he transferred his ideas to orchestral scores. In the next example the solo trumpet part carries the indication "In hat with felt crown," which indicates to the player to use a Derby mute or hat to muffle the sound. Notice the muted *sf* > *p* that introduces the solo; this effect is very common today.

EXAMPLE 11-28. Gershwin, Concerto in F, second movement, mm. 31–44

CD-4/TR. 58

31

Andante con moto

poco rit.

a tempo

Ob. 1, 2

Eng. Hn.

B♭ Cl. 1

pp

B♭ Cl. 2

pp

B♭ Bs. Cl.

pp

1. muted

Hn. 1, 2

sfz - p

sfz - p

muted

Hn. 3, 4

sfz - p

sfz - p

Vln. 1

Vln 2

Vla.

Vlc.

pp

35

B♭ Cl. 1

B♭ Cl. 2

B♭ Bs. Cl.

1. (in hat with felt crown) (cued Fl. & Vlns.)

B♭ Tpt. 1, 2

Vlc.

"Rip"

The example from Morton Gould's *Interplay* contains an effect called a "rip," derived from jazz but now used often in recently composed scores. It is used here to emphasize the *sffz* at the end of the phrase. In order to create this effect the player tongues hard *into* the note while using the lip to create a slight slur from below; this also creates a forte attack on the note that follows.

EXAMPLE 11-29. M. Gould, *Interplay*, fourth movement, 5 mm. before [21]

CD-4/TR. 59

New Techniques

A Combination of Effects

A fair number of new techniques for brass can be seen in the brief excerpt given in Example 11-30. Druckman uses two symbols to indicate mutes: Λ = straight mute, and ⏀ = harmon mute. The o indicates an open harmon mute and + one that is closed with the stem. In addition, the symbol *n* (*niente*) is used to indicate a pitch that either starts from nothing or fades out to no sound. Notice that some of the instruments are open and others are muted; in other words, while Trumpet 1 may be muted, Trumpet 2 may be open. The score is meticulously marked, which is mandatory when techniques that are not well established are desired. Druckman's demands on the brass choir are extensive, as they are for the other orchestral choirs that are playing.

ADDITIONAL PASSAGES FOR STUDY

Dukas, *La Péri*, "Fanfare"
Janáček, *Sinfonietta*, opening
Sibelius, Symphony No. 2, third movement, after the repetition of the Trio
Stravinsky, *L'histoire du soldat*, "March" (cornet and trombone)
Wagner, *Rienzi*, Overture (*Allegro energetico*)

EXAMPLE 11-30. J. Druckman, *Windows*, mm. 4–10

CD-4/TR. 60

Fl. 1
Fl. 2
Fl. 3
Ob. 1
Ob. 2
Eng. Hn.
Cl. 1
Cl. 2
Bs. Cl.
Bsn. 1
Bsn. 2
Cbsn.
Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1
Tpt. 2
Tpt. 3
Trb. 1
Trb. 2
Trb. 3
Tba.
Hp.
Perc. 1
Perc. 2
Perc. 3
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

7

decresc. with Tam-Tam

$\frac{3}{2}$ ♩= 43

Fl. 1
Fl. 2
Fl. 3
Ob. 1
Ob. 2
Eng. Hn.
Cl. 1, 2
Bs. Cl.
Bsn. 1
Bsn. 2
Cbsn.
Hn. 1
Hn. 2
Hn. 3
Hn. 4
Tpt. 1 senza sord.
Tpt. 2 poco sfzp senza sord.
Tpt. 3 poco sfzp senza sord.
Trb. 1 senza sord.
Trb. 2 senza sord.
Trb. 3
Tba.

$\frac{3}{2}$ ♩= 43

Hp.
Perc. 1 l.v.
Perc. 2 l.v.
Perc. 3 l.v.

2 solos Vln. 1 others div.
2 solos Vln. 2 others div.
2 solos Vla. others div.
2 solos Vlc. others div.
solo D.B. others

12

THE PERCUSSION ENSEMBLE

Percussion instruments have been with us since the dawn of humanity, especially in the highly developed cultures of Asia and Africa. Only in the past century has the composer or orchestrator of concert music become aware of their expressive potential. The number of percussion instruments available today is virtually unlimited. This embarrassment of riches is attributable to the fact that percussionists will go to great lengths to satisfy a composer's wishes, even to the extent of constructing new instruments on demand. Therefore, it is impossible for any book, even a specialized one on percussion only, to be all inclusive. A thoughtful study of the next three chapters, however, should enable the composer or orchestrator to learn about the most common orchestral percussion instruments and use this most colorful and versatile section of the orchestra to its maximum effectiveness.

HISTORICAL USES OF PERCUSSION INSTRUMENTS WITHIN THE ORCHESTRA

During the seventeenth and eighteenth centuries, a few percussion instruments stemming from Turkish military music were extensively used in operatic scores. These included snare drums, triangles, cymbals, and small gongs, plus castanets and tambourines adopted from the Mediterranean region. A few other instruments put in rare appearances in toy symphonies, and a piece written at the time of Bach and formerly attributed to him, the cantata *Schlage doch gewünschte Stunde,** includes a bell as the symbol of the tolling death knell. The timpani became fashionable in King Henry VIII's time. Henry Purcell was the first major composer to use cavalry drums for orchestral purposes. These drums had been imported from Germany for military use and eventually became the basis for the modern timpani or kettledrums.

The Turkish instruments slowly made their way from the opera house and church to the concert hall, and Mozart, Haydn, and Beethoven used some of them at selected places in their works to illustrate certain militaristic characteristics, for instance in the march variation from the fourth movement (Finale) of Beethoven's Symphony No. 9. The triangle, cymbals, snare drum, and bass

*According to the musicologist Gerhard Herz, this cantata is by Melchior Hoffman.



FROM LEFT TO RIGHT, IN FRONT: ROTO TOMS AND TOM-TOMS; IN MIDDLE: MARIMBA, VIBRAPHONE, CONGA DRUMS, AND XYLOPHONE; IN BACK: SMALL GONG, LARGE GONG (TAM-TAM), CHIMES, BASS DRUM, SNARE DRUM, TIMPANI, SUSPENDED CYMBALS, TENOR DRUM, AND GLOCKENSPIEL.

drum slowly shed their Turkish, military role during the mid- to late nineteenth century and became fully accepted as color instruments of the standard symphony orchestra.

With the rise of nationalistic composers as well as those who attempted to simulate the ethnicity of musical cultures other than their own, ethnic instruments such as the castanets, tambourine, cimbalom, and others appeared in the orchestral percussion section. Also, keyboard instruments such as the glockenspiel and xylophone became integrated into the enlarged symphony orchestra by the end of the nineteenth century. The percussion ensemble did not reach its full potential until the twentieth century, when it not only grew immensely in the number of instruments used but also became an orchestral ensemble in and of itself, particularly in works such as Edgard Varèse's *Ionisation* or George Antheil's *Ballet méchanique*. Works for percussion ensemble have become quite popular since the 1920s.

Another development in the growth of the orchestral percussion section is also partially due to ethnic consciousness in the West—that is, the renewed interest in the music of Africa, South and Central America, and Asia. The tremendous number of composers stemming from those traditions, as well as many Western composers interested in simulating these musics, have created an explosion of new ethnic percussion instruments. American composers such as Lou Harrison, Henry Brant, and George Crumb have used a great variety of ethnic instruments in their works. You should also examine the compositions of Toru Takemitsu, Tan Dun, Bright Sheng, Chen Yi, Xiougang Ye, and Chinary Ung, in which Asian percussion instruments are combined with Western ones. For South American idioms it is important to study the use of percussion in the works particularly of Heitor Villa-Lobos, Alberto Ginastera, Carmelo Saitta, and Gerardo Gandini.

In this book, our discussion of percussion instruments of necessity is limited to those most commonly used in Western art music up to the dawn of the

twenty-first century. We urge you to consult the bibliography in Appendix B to locate the specialty books that contain a wealth of information on the newer, lesser-known percussion instruments.

NUMBER AND DISTRIBUTION OF PERCUSSION PLAYERS

In symphonic circles the timpanist is considered a separate member of the percussion section. The reason for this most likely has to do with the longevity of the timpani as a regular member of the orchestra and the fact that the timpanist always plays that instrument only and should not be counted on to take over any other percussion parts—even though he or she may have time to do so.

The other percussionists play a variety of instruments; usually a percussion leader assigns the parts to the rest of the section. Those who are not percussion players often misunderstand what it takes to choreograph a piece so that all instruments called for in the score are played and no human clashes or accidental noises mar the performance. To decide whether one, two, three, four, or even five percussion players are needed to perform a work, the composer or orchestrator should first write out all the music and then consider the following two issues:

1. Can one player switch from one instrument to another in sufficient time? (This could involve, for instance, switching from a mallet instrument to one played with wooden sticks.)
2. How many percussion instruments can one person play simultaneously? (For example, this might mean playing a tam-tam with a beater in the right hand and a suspended cymbal with a stick in the left.)

Try to be as economical of personnel as possible; but for special cases it may be best to consult with an experienced percussionist before making a decision about how many players will be needed to perform a particular piece.

NOTATION OF PERCUSSION INSTRUMENTS

Many attempts have been made to standardize percussion notation as well as to agree on a symbolic designation for each instrument. Since such agreement has not yet been reached, it is incumbent on the composer or orchestrator to notate, in the clearest possible manner, what the performer is to play. It is best to explain what any symbolic designations for percussion instruments stand for, both on the score page and at the beginning of the part, so that the player can easily identify the instruments. Or, since many percussion players prefer written-out instrument and mallet names or descriptions rather than symbols, the composer should label the parts using the full names or appropriate abbreviations as these instruments occur in the work. In this chapter we will give the most common symbol for each instrument and provide a short example to illustrate its notation.*

*For the best possible thinking on the subject, see Kurt Stone, *Music Notation in the 20th Century* (New York: W. W. Norton, 1980), pp. 205ff.

The notation for pitched percussion instruments occurs on a typical five-line, treble-clef staff, or, in the case of keyboard instruments, on a grand staff. Notation for nonpitched percussion instruments can vary from score to score, but can be arranged in one of two general ways:

1. on a five-line staff, using either its lines or its spaces but not both; or

EXAMPLE 12-1. Percussion Notation on Five-Line Staff



2. on a single-line staff.

EXAMPLE 12-2. Percussion Notation on Single-Line Staff



In today's scores the second method is preferred. Notice the percussion clef (𝄥) used in both of these examples; it is generally reserved for instruments of indefinite or approximate pitch. On a five-line staff it is centered on the third line.

We will mention here one common symbol found in percussion scores: the *l.v.* designation (which stands for "let vibrate") or tie after a note; when used separately or together these symbols direct the percussionist to let the note or notes on the instrument vibrate for an indefinite period of time (for instance, see Example 12-8). We will discuss other aspects of percussion notation in Chapter 14.

MALLETS, BEATERS, AND STICKS

The nomenclature for the devices used to play percussion instruments will be designated in the following manner:

1. mallets, used for keyboard instruments;
2. beaters, used for other instruments, such as the tam-tam and gongs;
3. sticks, used for all drums.

The symbols for all mallets, beaters, and sticks, given below, are now widely accepted; nevertheless, they should be explained in a guide to the notation at the beginning of the score and parts, since some percussionists need to be reminded of their meaning.

Metal mallets

Hard mallets (wood or plastic heads)

Medium mallets (rubber heads)

Soft mallets (lamb's wool or soft felt heads)

Wire brushes

Bass drum stick

Heavy beater (for tam-tam, etc.)

Two hard mallets in each hand

Two soft mallets (l.h.) and two hard mallets (r.h.)

Two soft mallets in each hand

CATEGORIES OF PERCUSSION INSTRUMENTS

There are several ways to categorize this large kitchen of instruments. We shall first divide percussion instruments into those that produce clear, audible pitches (instruments of definite pitch) and instruments whose pitches are not necessarily clear and audible (instruments of indefinite pitch). Then we will separate instruments in each of these two large groups by the way they produce sound, using the four categories first established in the early twentieth century by Erich von Hornbostel:

1. idiophones
2. membranophones
3. chordophones
4. aerophones

It is very important to understand the concept of definite pitch in relation to all percussion instruments. The dividing line between definite and indefinite pitch is not at all well defined. The inharmonic (that is, discordant) partials and the noise factor of a definite-pitch percussion instrument are at times so pronounced that our ear often tolerates deviations from the prescribed pitch that we would never accept from other instruments of the orchestra. Richard Strauss, in his revision of Berlioz's *Treatise*, calls attention to several "out-of-the-harmony" pitches assigned to the timpani by such composers as Beethoven and Verdi, where retuning to the correct pitch was impossible because there was not enough time. Nonetheless, if the timpani pitches were close to the ones called for in the score (for instance, a 2nd away), the harmony of the rest of the orchestra was played over the "wrong" timpani note. Although neither Strauss nor any of us today would advocate this practice, especially on the precisely tuned modern timpani, it proves how deceptive the actual pitch of a definitely pitched percussion instrument can be. On the other hand, the nonpitched instruments as well as those with approximate pitches (such as high, medium, and low) blend in with the definite pitches around them in the orchestra, picking up fundamentals that make them consonant contributors to the chord and giving the lie to the notion that nonpitched percussion instruments are simply "noisemakers."

Today, electronic techniques are used to amplify, distort, or synthesize many



FROM LEFT TO RIGHT, AROUND TABLE: BONGOS, TIMBALES, STEEL DRUM, TEMPLE BLOCKS, AND CROTALES; ON TABLE: SLEIGH BELLS, TAMBOURINE, FINGER CYMBAL, WOODBLOCKS, CASTANETS, WOODEN SHAKER, SLIT DRUM, GUIRO, AUTO HORN, TIN WHISTLE, FLEXATONE, MARACAS, SLAPSTICK, BELL TREE, ANVIL, TRIANGLE, WHISTLES, CLAVES, SANDPAPER BLOCKS, COWBELLS, MUSICAL SAW, AND VIBRASLAP; BEHIND TABLE: WIND CHIMES (METAL AND GLASS).

percussion instruments or to sample their sounds, as in the works by Larry Austin (*Life Pulse Prelude*), William Bolcom (*Session IV*), Michael Daugherty (*Metropolis Symphony*), Mario Davidovsky (*Synchronisms No. 6*), and Donald Erb (*Klangfarbenfunk*, with electronic rock instruments).

Even the most recently invented instruments, unless they are electronically manipulated, are related to others in the percussion section by the material of which they are constructed, the manner in which they are played, or whether they are pitched or nonpitched. We shall briefly describe each instrument, giving more in-depth treatment to those most commonly used in the symphony orchestra, band, or wind ensemble, and present its method of performance. Then we will show its notation and basic playing characteristics and techniques. An extensive list of works that use a great variety of percussion instruments is included at the end of the chapter, and an exhaustive list of books on these instruments can be found in the Appendix B.

One word of caution before proceeding with our discussion. Many percussion instruments, especially the pitched idiophones that are struck with mallets, are manufactured in various sizes and therefore have different ranges. The composer should always choose the size he or she needs and leave the procuring of the proper instrument to the performing organization. Within reason, percussionists are usually most happy to oblige the composer.

INSTRUMENTS OF DEFINITE PITCH

Idiophones

Idiophones produce their sound by the vibration of the entire body of the instrument. Triangles, cymbals, wood blocks, and so on are such instruments. However, some—marimbas, vibraphones, and chimes—are constructed of several vibrating bodies combined into one instrument, such as the many keys on a vibraphone or tubes on the chimes. In order to produce a sound on an idiophone, a number of techniques may be employed: they may be struck, scraped, shaken, or stroked.

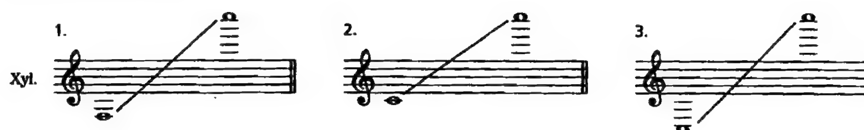
Mallet Instruments

Xylophone (Xyl.); *Xilofono* (It.); *Xylophon* (Ger.). The xylophone was the first mallet instrument to find a permanent place in the orchestra. It consists of a set of wooden bars of varying lengths arranged in the form of a piano keyboard. Until recently, the xylophone had no resonators below its wooden bars. Today most of them have these resonators to give added body to the very dry, hard, brittle sound of the instrument. The single notes have a very sharp articulation and very little sustaining power. If a note is to be sustained, the player must roll it with two mallets. The most successful passages are therefore rapid or single notes, which give a sharp edge of brilliance to similar passages played by other instruments in the orchestra at the same time. These effects are like sharp pizzicati. Trills, arpeggios, and glissandi are also extremely effective.

CD-ROM
CD-5
XYLOPHONE

Xylophone parts are notated on a single staff in the treble clef. The instrument sounds an octave higher than written. Some composers prefer to notate it at actual pitch, but if this procedure is followed, a word to that effect should appear at the beginning of the score. There are several models of the instrument with the following ranges:

EXAMPLE 12-3. Range



The model with the range labeled number 2 is the most common and is often called the standard size. However, since the other two models exist, composers have been able to write works calling for extended ranges. If models 1 and 3 are unavailable for some reason, the player can compensate by transposing the notes not found on a given instrument into another octave.

Usually the xylophonist uses only two mallets, one in each hand. Ebonite, hard rubber or plastic, and on occasion hard wooden mallets are used for loud playing, but for the upper register hard rubber mallets are not as effective. For soft playing, mallets whose heads are made of yarn are used. The instrument is most brilliant and piercing in the top register, but has great power to cut through the orchestra at all registers if the right mallets are used. Although the composer should specify the type of mallets by the words *hard*, *medium*, or *soft*

for all mallet instruments, the actual type and construction material of the mallet should be left to the choice and discretion of the performer.

CD-4/TR. 61

EXAMPLE 12-4.* Xylophone

Quite fast

Xyl.

1st time *f* using hard mallets
2nd time *pp* using soft mallets

*If this example appeared in an actual piece, the composer would have to give the performer time to change mallets before calling for a repetition.

ADDITIONAL PASSAGES FOR STUDY

Gershwin, *Porgy and Bess*, beginning
Holst, *The Planets*, "Uranus," mm. 26–40 and again from [7] to [8]
Mahler, Symphony No. 6, first movement
Saint-Saëns, *Carnaval des animaux*, "Fossiles"
Saint-Saëns, *Danse macabre*
Stravinsky, *Petrushka*, First Tableau, Russian Dance, 13 mm. after [42] (xylophone and piano)

CD-ROM
CD-5
MARIMBA

Marimba (Mar.); *Marimbaphon* (Ger.). The marimba is a direct descendant of the xylophone and looks very much like its ancestor. Composers have written extensively for this instrument only since 1950, but it is now coming into its own as part of the contemporary orchestra. The marimba's rosewood bars, also arranged keyboard fashion, are of course graduated, but thinner, longer, and wider than the xylophone's, and the resonators have always been part of its construction. The playing technique is exactly like the xylophone's, but the marimba's mellower, deeper sound has generated a different kind of music.

The size and range of the marimba is fairly standard (although the range of some marimbas goes down to A^2 or even F^2), and there are no transposition problems since it sounds as written. It has the same four-octave compass as the xylophone, although it sounds an octave lower. The music can be notated on one or two staffs, in either the treble or bass clef.

EXAMPLE 12-5. Range

Bass Marimba
(rare)

The lower register of this instrument is unique and especially beautiful; in the higher registers, the marimba's tone resembles the xylophone's.

The most successfully used mallets for the marimba are those made of yarn or soft rubber. Most marimba players use two mallets in each hand (a few even

manipulate three in each hand), which makes it rather easy to roll the larger chords characteristic of the marimba repertoire.

EXAMPLE 12-6. Marimba

CD-4/TR. 62

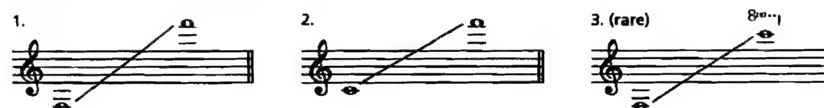


Vibraphone (Vib.); ***Vibrafono*** **(IT.);** ***Vibraphon*** **(GER.).** The vibraphone is essentially an American invention, vaguely related to the glockenspiel because of its metal bars. It is the only mallet instrument that uses vibrato or tremolo produced by an electrically driven series of fans located on top of the resonator tubes.

CD-ROM
CD-5
VIBRAPHONE

There are three sizes of vibraphones, the first and second of which are available in most professional groups; the third size is rare, and you should avoid writing for it.

EXAMPLE 12-7. Range (sounds as written)



The graduated metal bars are arranged in keyboard fashion and can be played with the motor on or off. If the motor is off, there is no added vibrato, and the tone sounds very much like a struck tuning fork—pure and metallic, with a limited sustaining time. When the motor is on, the pitch vibrates and comes alive with a great deal of sustaining time. The motor's speed can be controlled so that a tone can vibrate very slowly or very quickly. You should give precise instructions regarding the motor—off, on, speed—in both the score and part.

Another device that helps sustain and then dampen the pitch is a pedal operated by the foot. When it is depressed, the tones ring; when it is released, the pitches are dampened. The composer should indicate any intentions for the use of this pedal by writing *l.v.* ("let vibrate") over a note or chord and show how long it is to be sustained. Chords of four or even six notes are possible; trills, glissandi, and fast passages are, of course, as effective on the vibraphone as on the xylophone and marimba; however, the nonrolled sustained pitches or chords give this instrument its unique sound.

A variety of mallets is available, including hard and medium cord mallets as well as rubber mallets. Plastic and wooden mallets are used rarely, if ever, but yarn mallets are common for soft passages, and wire brushes are very effective in glissando effects.

CD-4/TR. 63
INDEX 1 / 0:00

EXAMPLE 12-8. Vibraphone

Scherzando

Vib.

1st time motor on (medium speed)
2nd time motor off

(sim.)

l.v. l.v.

Two newer techniques can be achieved on the vibraphone, xylophone, and marimba. In the first, called "dead stroking" or "dead sticking," the player strikes the bar and then leaves the mallet on the instrument. This action gives a nonvibrant (muffled staccato) color and is especially useful when one of these instruments is featured as soloist or is sparingly accompanied. The following example is played on the marimba.

CD-4/TR. 63
INDEX 2 / 0:55

EXAMPLE 12-9. "Dead Stroking"

= "dead stroke"

Very slowly

Mar. with soft mallets

CD-ROM
CD-5
BOWED VIBRAPHONE

In the second, performed mainly on the vibraphone, the player rubs the hairs of a cello or bass bow on the end of the key, producing a very eerie sound. This technique is especially effective with the motor on and the sustaining pedal depressed.

CD-4/TR. 63
INDEX 3 / 1:15

EXAMPLE 12-10. Cello Bow on Vibraphone

Slowly
arco
pedal depressed

Vib.

1st time motor on
2nd time motor off

ADDITIONAL PASSAGE FOR STUDY

E. Zwilich, Symphony No. 1, second movement

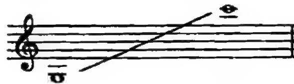
CD-ROM
CD-5
GLOCKENSPIEL

Glockenspiel (Glsp.); *Campanelli* (It.); *Jeu de timbres* (Fr.); *Glockenspiel* (Ger.). G▷ The German name for orchestra bells is the one most commonly used. The glockenspiel consists of two rows of steel bars arranged like a key-

board. These highly tempered steel bars are mounted on a frame and attached to a portable case. It is the oldest of all the mallet percussion instruments, and we find numerous passages for it in nineteenth-century music.

It is a transposing instrument always sounding two octaves above the written pitch unless otherwise specified, but some composers (Schoenberg, for one, in his *Five Pieces for Orchestra*) insist on notating it at pitch. The glockenspiel comes in only one size.

EXAMPLE 12-11. Range



This instrument is usually played with only two mallets, although some performers use a two-mallets-per-hand technique. The glockenspiel is the only instrument for which a brass mallet should be used. This gives the loudest and most sonorous results. Other mallets, made of wood, plastic, or medium rubber, give less of a ringing and more of a "clicking" sound, whereas the harder yarn mallets enable the performer to play quite softly. The glockenspiel has the power to be heard above a whole tutti orchestra, especially in its upper register, and even though it has the capacity to sustain pitches longer than the xylophone and the marimba, the player can slow the process of decay and add a bit of vibrato by waving the hand back and forth close to the bars after they are struck.

EXAMPLE 12-12. Glockenspiel

CD-4/TR. 64



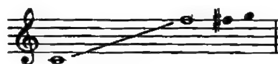
ADDITIONAL PASSAGE FOR STUDY

Wagner, *Die Meistersinger*, Act III, Scene 5, Waltz (glockenspiel, flute, oboe)

Chimes (Chm.); *Campane* (It.); *Jeu de cloches* (Fr.); *Glocken* (Ger.). The chimes of the orchestra are often called tubular bells. They are a series of cylindrical chromium plated brass tubes of varying lengths that are hung on a wooden or metal rack and arranged chromatically. Some come in sets of eighteen, but most American orchestral tubular bells consist of twenty bells. They sound as written.

CD-ROM
CD-5
CHIMES

EXAMPLE 12-13. Range



The sound simulates that of a church bell and has the same "out-of-tune" quality. The set has a sustaining pedal, which the player operates with the right foot. Chimes are effective in soft as well as loud passages. If a soft sound is de-

sired, the player uses yarn mallets or rawhide mallets covered with cloth. For louder sounds rawhide mallets without a cloth are used; these actually look more like a hammer than a mallet. Faster passages convey the impression of many church bells ringing at once, especially if the sustaining pedal is depressed. The glissando is also practical but should not be overused. It is good policy not to write more than two simultaneous pitches at once, although some composers have asked for two players, each of whom plays two notes to form a four-note chord.

CD-4/TR. 65

EXAMPLE 12-14. Chimes



ADDITIONAL PASSAGES FOR STUDY

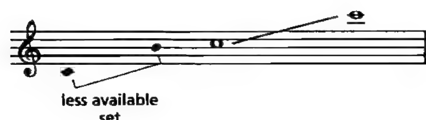
Holst, *The Planets*, "Saturn," end
Musorgsky-Ravel, *Pictures at an Exhibition*, "The Great Gate of Kiev," end
Puccini, *Tosca*, Acts I and II
Wagner, *Parsifal*, final scene

CD-ROM
CD-5
CROTALES

Crotales (Crot.); ***Crotali*** **(It.)**; ***Zimbeln*** **(Ger.)**. Crotales, sometimes referred to as antique cymbals, are a set of small metal discs, three to five inches in diameter. They can be mounted on a wooden board shaped like a piano keyboard or held by a leather strap. A metal mallet is frequently used to play them, but when hand held, they can also be struck together like cymbals. Crotales actually sound very similar to the glockenspiel, particularly when struck by a metal mallet, but have a less piercing, more diffuse sound when struck together.

These pitched discs should not be confused with finger cymbals, which are idiophones of indefinite pitch. Crotales are thicker and are tuned in a chromatic scale. As far as available pitches are concerned, two kinds of crotales exist. The lower set, which is rare, ranges from middle C to B^4. The more popular set contains the pitches from C^5 to C^6. As on the glockenspiel, all pitches sound two octaves higher than notated.

EXAMPLE 12-15. Range



A metal mallet is used for best effect; wooden and plastic models can also be used, although they do not have the same sustaining power. Plastic and medium rubber mallets are often used for softer effects. The player will sometimes wave a hand over the disc to sustain the sound; also, when the discs are held by their leather handles after they have been manually struck together, they can be shaken to keep the sound alive.

EXAMPLE 12-16. Crotales

CD-4/TR. 66
INDEX 1 / 0:00



Like the keys of the vibraphone, each of the discs on the crotales can be bowed with a cello or bass bow, which produces an eerie but piercing sound.

CD-ROM
CD-5
BOWED CROTALES

EXAMPLE 12-17. Cello Bow on Crotales

CD-4/TR. 66
INDEX 2 / 0:21



Steel Drums (Steel Dr.). This is a misnomer, for a steel drum is not a drum at all, but the top portion of a large oil can—a metal head on a metal shell. It is a beautiful-sounding instrument of Caribbean origin. The top is heated until it is slightly concave; then it is incised into sections, each of which is tuned to a different pitch by hammering to the appropriate indentation. The sound, which resembles a metallic, ringing marimba, is produced by striking the different pitches or sections with a soft mallet. A number of these instruments are usually played by a group of players called a steel band. One may play the melody while the others provide the harmony. Not too many composers have as yet availed themselves of this instrument, except to invoke folk life in the Caribbean.

EXAMPLE 12-18. Steel Drums

CD-4/TR. 67



Shaken or Stroked Instruments

The musical saw, flexatone, and crystal glasses all have a kind of "electronic" sound and have been very successfully used since World War II by such composers as Crumb, Schwantner, Mayuzumi, Kagel, and Haubenstock-Ramati.

Musical Saw (Saw); ***Sega cantante*** **(IT.);** ***Lame musicale*** **(FR.);** ***Singende Säge*** **(GER.).** For a long time this was a folk instrument made from an ordinary carpenter's hand saw. Now it is manufactured with a finely tuned steel blade, without teeth, fixed to a wooden handle. The instrument is held between the knees; the left hand holds the extremity of the blade, while a violin bow is drawn across the edge to produce the sound. The player has no fingering to fall back on; he or she simply curves the blade in a certain way to obtain the pitches.

EXAMPLE 12-19. Approximate Range (sounds as written)



There is a very pronounced vibrato to every pitch and a glissando between all the pitches. The musical saw is most suited to singing, sustained lines, and even though not as focused, the sound is very much like that of a bowed vibraphone with the motor tuned up to the highest degree of vibrato.

CD-4/TR. 68
INDEX 1 / 0:00

EXAMPLE 12-20. Musical Saw



Flexatone (Flex.); *Flessatono* (It.); *Flexaton* (Ger.). This instrument sounds very much like the musical saw, but works on a slightly different principle. A thin, triangular-shaped blade is fixed at its base into a metal frame with a handle. The unattached end of the blade is near the handle, so it can be flexed by the thumb to adjust intonation. Strips of steel spring are fixed to each side of the blade with a soft ball fastened to each of the free ends. When the player shakes the instrument, the ball strikes the blade and makes the sound, which is adjusted by the thumb. It is best not to specify exact pitches, but let the instrument "fit into" the approximate ones. However, when pitches are notated, the player will attempt to come as close to them as possible.

EXAMPLE 12-21. Approximate Range



The flexatone produces a high-pitched sound with much tremolo, although single shorter sounds can also be produced.

CD-4/TR. 68
INDEX 2 / 0:15

EXAMPLE 12-22. Flexatone



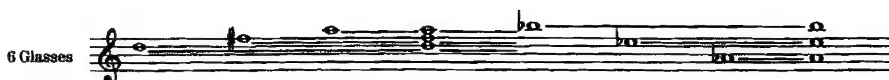
Crystal Glasses. Crystal glasses are simple goblets of various sizes made out of crystal, which produce beautifully pure pitches. They can be struck but are more commonly stroked around the rim with wetted fingers to give long, singing tones. The practice of using glasses as musical instruments is quite old, going as far back as Gluck. A close relative, the glass harmonica, an instrument made of glass bowls, was of great interest to Mozart, Haydn, and Beethoven.

Some composers today, instead of requiring set pitches for the glasses, simply ask for low, medium, and high, or in the case of Haubenstock-Ramati's

Symphonies de timbres, four glasses—soprano, alto, tenor, and bass. In addition to glasses, porcelain bowls, glass bottles, and flasks have all been utilized.

EXAMPLE 12-23. Crystal Glasses

CD-4/TR. 69



Membranophones

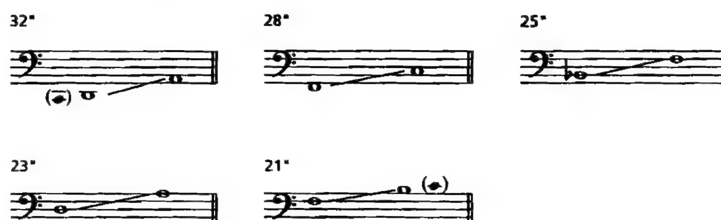
Membranophones produce their sound by the vibration of a skin or membrane tightly stretched and fastened over a resonating shell or tube. The resonator can be open at one end (bongos, tambourine, and so on) or completely closed, as in the timpani. Some membranophones, such as snare, tenor, and bass drum, have two membranes. One of them is struck while the other vibrates "in sympathy." Membranophones are usually struck with some kind of beater or by the hand to produce the vibration.

Timpani (Timp.); *Timbales* (Fr.); *Pauken* (Ger.)

CD-ROM
CD-5
TIMPANI

The oldest regular percussion members of the symphony orchestra are the timpani or kettle drums. Until this century the total range of the timpani was . Now, however, we have a series of interlocking drums that give us a much larger range. Four sizes of timpani are commonly available in all orchestras: 32-inch, 28-inch, 25-inch, and 23-inch; if a *piccolo timpano*, 21 inches in diameter, is not available, a tuned tom-tom or roto tom may be used in its place.

EXAMPLE 12-24. Ranges



CD-ROM
CD-5
TUNING OF
TIMPANI

Until earlier in this century the tuning of the timpani was accomplished by tightening or loosening the screws placed around the perimeter of the drumhead, which controlled the tautness of the calfskin membrane. Much time was needed to change the tuning of the instrument; therefore, only limited pitches were assigned to the timpani. Today the drums are fully mechanical, with a foot pedal on each drum that changes pitches quickly and easily, though most timpanists still carefully check the pitches, and often, when time permits, adjust the drums manually. This innovation has greatly enhanced the function and potential of the instrument.

During the Classical period only two drums were commonly used in the orchestra, usually a 28-inch and a 25-inch. The role of the timpani was to strengthen the tonic and dominant bass notes and participate in strong tutti passages, especially at climactic points or cadences. Occasionally timpani were

called for in quiet passages to create a special atmosphere, such as in the Haydn "Drum Roll" Symphony. Not until Beethoven's time did the timpani become a solo instrument. The standard coupling with the trumpets was still very prevalent in the symphonic scores of Haydn and Mozart, so that when Beethoven, in his last two symphonies, called for the two timpani tuned in an octave F, and in the sardonic scherzo of the Ninth used solo timpani, it was quite a shocking innovation. Berlioz, who even used two or more sets of drums and two or more players in some works, initiated a development in timpani writing that eventually expanded the timpani to three and then four or more drums in our own time.

The timpani are extremely versatile. They can play single notes and rolls; with the mechanical pedals, they can easily do glissandi. Single notes can be slow or fast, and the dynamic range of the timpani is exceedingly great.

Usually, special timpani mallets are used. These come in hard, medium, and soft varieties. Other mallets, such as wooden drumsticks, felt mallets, or simply the handles of the timpani mallets, and so on, can be used for special effects.

The timpani tone is affected not only by the kind of mallet used but also by the place on the head where the mallet strikes the drum. Usually, the player strikes the head about six inches in from the rim. A beautiful *pianissimo* can be achieved by playing even closer to the rim. A very thick, thudlike sound that obscures the pitch somewhat is obtained by hitting the center of the head.

Timpani can be muted by placing a cloth to cover part or all of the head. Today, some composers have asked timpanists to place cymbals, tambourines, maracas, and other percussion instruments on the head, letting them ring sympathetically when the drum is struck. The side of the drum, called the bowl, as well as the rim of the drum, is sometimes played with wooden sticks as a non-pitched percussion instrument.

The timpani part must be carefully prepared to show dynamics and the exact duration of each note; for instance, where a roll or trill is to end, how long a note may ring, and so on. A roll can be notated in one of two ways:

EXAMPLE 12-25. Timpani Rolls



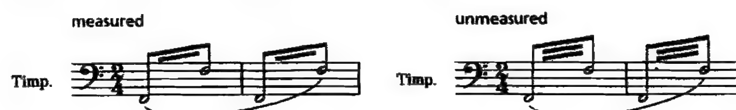
A longer roll should be notated:

EXAMPLE 12-26. Longer Timpani Rolls



A tremolo on two different drums should be notated to indicate whether it is measured or unmeasured.

EXAMPLE 12-27. Tremolo on Two Different Drums



Two or more notes can be played at the same time. This passage is possible on a four-drum set:

CD-ROM
CD-5
TIMPANI CHORDS

EXAMPLE 12-28. Four Timpani

CD-4/TR. 70



It is advisable to mark changes in tuning, especially if it must be accomplished rather quickly. This is done in the following manner:

EXAMPLE 12-29. Marking Tuning Changes



Here are some examples of timpani usage from the orchestral literature:

EXAMPLE 12-30. Beethoven, Symphony No. 9, second movement, mm. 261–273

CD-4/TR. 71
INDEX 1 / 0:00



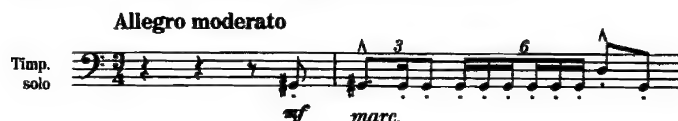
EXAMPLE 12-31. Berlioz, *Symphonie fantastique*, fourth movement, mm. 83–89

CD-4/TR. 71
INDEX 2 / 0:15



CD-4/TR. 71
INDEX 3 / 0:33

EXAMPLE 12-32. Bloch, *Schelomo*, mm. 170–171



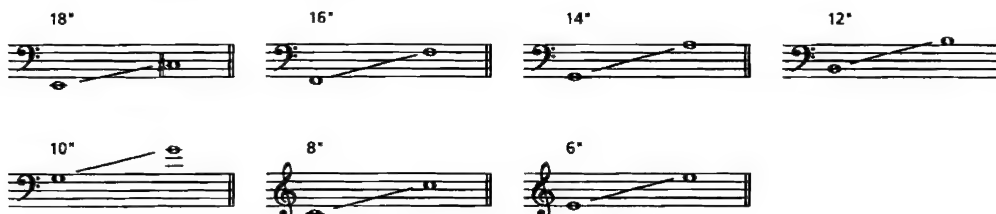
ADDITIONAL PASSAGES FOR STUDY

Bartók, *Music for Strings, Percussion, and Celesta*, second and fourth movements
Bernstein, *Jeremiah* Symphony, second movement, mm. 288–301
Elgar, *Enigma Variations*, "Troyte," Presto
Hanson, Symphony No. 2, first movement, from [G] to the end
Harris, Symphony No. 3, mm. 421–425
Holst, *The Planets*, "Saturn," from [2] to the end (two sets of timpani)
Mahler, Symphony No. 1, third movement, beginning
Nielsen, Symphony No. 4, fourth movement
Shostakovich, Symphony No. 1, fourth movement, at [35]
Sibelius, Symphony No. 1, third movement, m. 4
Wagner, *Siegfried*, Funeral Music, opening

Roto Toms (R. Tom); *Roto-tom-tom* (It.); *Tom-Tom-Spiel* (Ger.)

An American manufacturer (Remo) recently developed a series of roto toms (tom-toms) that can play specified pitches and are tuned by manual turns of the shell on a drum frame. It is quite possible to play a slow melody on them. These drums come in seven sizes and have a pitch compass as follows:

EXAMPLE 12-33. Ranges



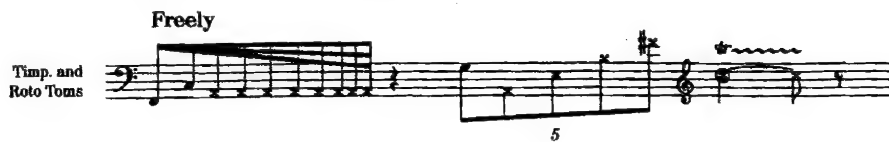
Roto toms blend beautifully with all kinds of instruments but especially with the timpani. They are now made with a resonator very much like a timpani bowl, producing a sound quite compatible with that instrument but with cleaner, more articulate pitches. In fact, the roto tom, which uses the same beaters and playing techniques, greatly extends the potential range of the timpani. This instrument can also create excellent contrast in repetitions of timpani passages at higher pitches. When scoring for timpani and roto toms in combination, use a different-shape notehead for each instrument in the score to help the player distinguish between the two instruments. The following notation is suggested:

Timpani: regular notation

Roto toms:

EXAMPLE 12-34. Timpani and Roto Toms

CD-4/TR. 72



Older roto toms that do not have definite pitches are now obsolete, having been replaced in most organizations by the drums described above. Some orchestras, however, still use them. These roto toms come in three sizes: 10-inch, 8-inch, and 6-inch, with the following ranges:

EXAMPLE 12-35. Ranges



Like the Remo toms, these are tuned by rotating the head clockwise to tighten it and counterclockwise to relax it. The plastic heads are stretched over a metal rim that is fastened to a base. Their sound is much drier than that of the Remo toms and has much less sustaining quality than either the timpani or Remo toms. All kinds of wooden sticks, wood, plastic, or rubber mallets, and even cord mallets, are effective on them.

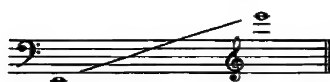
Chordophones

Chordophones produce their sound by the vibration of their strings. All chordophones are tuned instruments. In the percussion section, the chordophones consist of the cimbalom and the keyboard instruments, such as the piano, harpsichord, harmonium, and organ, that are used as members of the modern symphony orchestra rather than soloists. The sound of all these instruments, produced when the strings are struck, is amplified by a resonator, which may be a case, a board, a box, or a combination of these. The cimbalom, whose strings are struck directly by the player with a leather or wooden mallet, will be covered in this chapter. Keyboard instruments, whose strings are activated by a mechanism set in motion when the player depresses a key, will be discussed in Chapter 13.

Cimbalom (Cimb.)

The cimbalom is the most highly developed of the ancient dulcimers. One version of it is prominently featured in the folk music of Appalachia. Early in the twentieth century the Hungarians adapted the cimbalom for use in the symphony orchestra. The modern cimbalom is usually trapezoid shaped. It is laid flat and struck on its metal strings in various ways with leather or wooden mallets. It is similar to a piano in that it has a multiple of strings for each pitch, although it has no keyboard. Often it is equipped with a foot-operated damper pedal. The cimbalom has a compass of four octaves with all chromatic tones.

EXAMPLE 12-36. Range



The cimbalom has been used beautifully by Bartók, Kodály, and Stravinsky in rapid and florid passages. As on the marimba, the notes to be sustained are usually rolled, whether or not they are marked that way in the score.

CD-4/TR. 73

EXAMPLE 12-37. Kodály, *Háry János Suite*, fifth movement, mm. 87–93

Today the cimbalom is used in highly developed art music by such composers as Dutilleux, for instance in his *L'Arbre des songes* and in many of his other works for strings.

ADDITIONAL PASSAGE FOR STUDY

Dutilleux, *L'Arbre des songes*, first movement especially

Aerophones

Aerophones produce their sound by the vibration of an air column within an enclosed body. Woodwind and brass instruments are aerophones; in the percussion section, all kinds of whistles, sirens, and machines (like the wind machine) are included in this category. Although all have definite pitch, their pitch is not always specified—except perhaps for the whistles.

Whistles

Whistles of all kinds are used for various effects, especially in scores composed during the last few decades. The kind of whistle required should be carefully indicated in the score: bird whistle, police whistle, slide whistle, tin whistle, train whistle, and so on. Tunes for the whistle are often exactly notated, as in the next example for tin whistle, from Copland's *Billy the Kid*:

CD-4/TR. 74

EXAMPLE 12-38. Copland, *Billy the Kid*, "Street in a Frontier Town," mm. 1–4



If no specific pitches are desired, there should at least be an explanation of exactly what the whistle is to do.

All kinds of whistles, including tin whistles, have been popularized by James Galway. In his flute concerto *Pied Piper Fantasy*, which was written for Galway, John Corigliano asks the soloist at the climax at the end of the piece to guide children playing tin whistles into the concert hall and onto the stage.

ADDITIONAL PASSAGES FOR STUDY

A. Kernis, *New Era Dance* (whistles and synthesizer)
J. Williams, *Far and Away* (whistles, pipes, Irish harp, two fiddles)

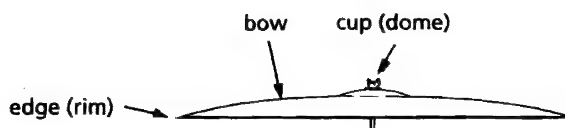
INSTRUMENTS OF INDEFINITE PITCH

Idiophones

Metal

Cymbals (Cymb.); *Piatti* (IT.), *Cymbales* (FR.); *Becken* (GER.)
Pair of Cymbals
Suspended Cymbal or
Hi-Hat Cymbals

The cymbal, an old Turkish instrument, is a curved metal plate with a raised cup or bell in the center. The three parts of the cymbal are as follows:



Often a composer or orchestrator will specify exactly which part of the cymbal needs to be struck to create a particular effect.

Cymbals are made in at least three sizes, but if a composer asks for one or more different sizes from the norm the percussionist can usually find them. The standard sizes are 10 to 14 inches, 15 to 18 inches, and 19 to 24 inches.

CD-ROM
CD-5
PAIR OF CYMBALS

Crash Cymbals (Cymb.). Pairs of cymbals are held by leather straps fastened at the cup and played using three basic methods:

1. They can be clashed together forte and then held high over the player's head. If the stroke is fast, they can be clashed and immediately damped

against the player's chest. Soft strokes, as heard in the example below, are very effective.
2. One cymbal can be swished across the other to give a hissing effect.
3. A roll can be created by rubbing the plates together with a fast rotary motion, although this does not come off very satisfactorily.

EXAMPLE 12-39. Pair of Cymbals

CD-4/TR. 75
INDEX 1 / 0:00

Moderato
swish
Cymb. in hand
1st time *f*
2nd time *p*
pp *ff* *ff*

Suspended Cymbals (Susp. Cymb.). A cymbal can be suspended from a strap on a stand and struck with a wooden drumstick for a well-articulated stroke, or marimba yarn mallets or wire brushes for softer effects. These sticks and mallets can be used to effect rolls on the various sizes of suspended cymbals. A triangle beater is sometimes used to strike the instrument or scrape it. This gives a truly metallic sound. Since differences in the sound result from striking or rolling at the edge, the bow, or the cup, it is best to specify the exact point of contact; otherwise, the performer will usually strike or roll toward the edge. A suspended cymbal can also be bowed.

CD-ROM
CD-5
SUSPENDED CYMBALS

EXAMPLE 12-40. Suspended Cymbals

CD-4/TR. 75
INDEX 2 / 0:36

1 Slowly
scrape
3 Susp. Cymb.
pp *ff* *pp* *ff* *p*
6 take brushes
take bow
with stick
pp 3 3 *f* *p* *sf*

Hi-Hat Cymbals (Hi-Hat). This instrument consists of two cymbals facing each other, mounted vertically on a metal rod and crashed together by a foot pedal. When crashed, they produce the dry, nonsustained click typical of drum set parts, or a slightly clattery, soft crash when allowed to vibrate. Hi-hat cymbals are not often used in the orchestra unless a composer wishes to simulate the drum set of jazz combos.

CD-ROM
CD-5
HI-HAT CYMBALS

EXAMPLE 12-41. Hi-Hat Cymbals

CD-4/TR. 75
INDEX 3 / 1:31

Hi-Hat
l.v.

Sizzle Cymbal (Sizzle Cymb.). This newest member of the cymbal family comes in a variety of sizes and is played with the same beaters as for the suspended cymbal. The sizzle cymbal is also suspended by a strap or attached with a metal clamp to a vertical rod stand. It produces a sizzling, hissing sound when

CD-ROM
CD-5
SIZZLE CYMBAL

struck or rolled because it has holes drilled around its circumference that are filled with little metal rivets. When the instrument is played, these rivets bounce and produce a unique sound.

CD-4/TR. 75
INDEX 4 / 1:47

EXAMPLE 12-42. Sizzle Cymbal



Chinese Cymbals (Chinese Cymb.). Some composers—Chen Yi, Tan Dun, and Bright Sheng in particular—have used what we call Chinese cymbals. These cymbals have inverted edges and sound like high tam-tams.

CD-ROM
CD-5
FINGER CYMBALS

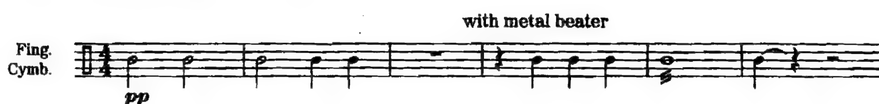
Finger Cymbals (Fing. Cymb.); *Cimbalini* (IT.); *Cymbales digitales* (FR.); *Fingerzimbeln* (GER.). Finger cymbals consist of a pair of small metal plates about two inches in diameter, having no definite pitch. They can be played in two different ways:

1. When two are struck together they produce a high metallic sound not unlike that of the triangle;
2. When one is struck separately with a metal, wooden, or plastic beater it produces a definite but unspecified pitch. This sound, however, should not be confused with that of the different sized crotales, which because they are manufactured with much higher caliber materials have definite, specified pitches.

Either of the finger cymbals' playing techniques produces tones that easily blend with any pitches surrounding them.

CD-4/TR. 76

EXAMPLE 12-43. Finger Cymbals



These cymbals have been used as rhythm instruments in contemporary performances of medieval music.

CD-ROM
CD-5
TRIANGLE

Triangle (Trgl.); *Triangolo* (IT.); *Triangel* (GER.). Δ The triangle, most likely of Turkish origin, is one of the oldest nonpitched percussion instruments in the orchestra. It was favored as an instrument in early opera, and from the time of Haydn and Beethoven it became a regular member of the symphony orchestra (see especially Example 14-14, measure 14ff. from the Finale to Beethoven's Symphony No. 9). It is a round metal rod bent into the shape of a triangle. Several sizes are available; three basic ones—6 inches, 8 inches, and 10 inches—give a pitch gradation of high, medium, and low.

The triangle has a crystalline, pure, high timbre that can be used as a solo sound, but in combination with other instruments it gives luminescence to a large orchestral chord. It is played with a small metal beater and can be struck

or rolled. A roll or trill is produced by striking two sides of the triangle in one of the corners. Softer sonorities are really more effective than loud ones, which tend to get tiresome and obtrusive. The instrument blends beautifully with strings and winds, especially in the upper register, but also renders good contrast to bass instruments. It has a good sustaining time, and the *l.v.* (let vibrate) symbol is often used in its notation. You should be careful in scoring for triangle, however, to specify exactly how long the sound should last.

EXAMPLE 12-44. Triangle

CD-4/TR. 77



Anvil (Anv.); *Incudine* (IT.); *Enclume* (FR.); *Amboss* (GER.). This instrument simulates the sound of a blacksmith's anvil. It was used quite a bit in the late nineteenth century, especially by Wagner in *Das Rheingold*. Numerous twentieth-century composers, such as Varèse, Bloch, Copland, Foss, and Rouse, also have written for it. It is a large steel block struck by a metal hammer. Any similar object can be substituted for it if an orchestra does not provide the manufactured anvil; some percussionists have even used a small section of railroad track.

CD-ROM
CD-5
ANVIL

EXAMPLE 12-45. Anvil

CD-4/TR. 78
INDEX 1 / 0:00



Cowbells (Cowb.); *Cencerro* (IT.); *Sonnailles* (FR.); *Kuhglocken* (GER.). In Europe the real thing is frequently used, especially for such passages as in Mahler's Symphony No. 6, first movement (measures 198–216). They are used in Latin American dance bands as much as if not more than in symphony orchestras. In this country cowbells are manufactured in various sizes from about three to ten inches, have a somewhat triangular shape, and are usually bronze-plated. The pitch of the low, medium, and high sizes does not vary greatly. They are struck with a snare drumstick and give a clanging sound. In the following example, the cowbells, in four different sizes, are distributed on the score in terms of relative height of pitch:

CD-ROM
CD-5
COWBELLS

EXAMPLE 12-46. Cowbells

CD-4/TR. 78
INDEX 2 / 0:14



Some twentieth-century composers have asked for "pitched" cowbells (Messiaen, Schwantner, Crumb, Tower), which are now available.

ADDITIONAL PASSAGES FOR STUDY

Tan Dun, *Gitimalia* (marimba, six tuned cowbells, two harps, amplified guitar)
J. Tower, *Sequoia*, beginning (celesta, piano, and tuned cowbells)

CD-ROM
CD-5
TAM-TAM

Tam-Tam and Other Gongs. Gongs can be divided into high, medium, and low pitched instruments. Although there has been much discussion about "exact" tuning of gongs, it must be said that even the best ear will have problems identifying the fundamental pitch of most of them. Nevertheless, a differentiation should be made between the nonpitched gong family, of which the tam-tam is the largest member, and the authentic Asian gongs, which do have specific pitches.

The tam-tam, usually the largest of the gongs and therefore the lowest sounding, was the most common in the symphony orchestra until recently. Like most gongs, it is made of a heavy metal; but unlike most gongs, which are usually played with a timpani mallet or a slightly thicker beater, the tam-tam is struck with its own large device called a tam-tam beater.

CD-4/TR. 79

EXAMPLE 12-47. Gongs

CD-ROM
CD-5
WIND CHIMES

Wind Chimes (W. Ch.). There are three kinds of wind chimes:

1. bamboo wind chimes
2. glass wind chimes
3. metal wind chimes

All wind chimes are based on the same principle: the suspending of various sizes of bamboo sticks, pieces of glass, wood, or metal, as in a mobile. Generally, the chimes are struck by the hand and jangled until they are stopped by the hand. Bamboo and wooden chimes emit a rather small, hollow, brittle, or rustling sound; they can also be stroked by a small wooden stick or grasped together suddenly to emit a dry, sudden, and louder sound similar to "chock." Wooden chimes are pitched much higher than those made of bamboo. Glass chimes emit a very high, delicate, soft jingling sound; metal chimes sound a bit more blatant yet not very loud. The following passage demonstrates the sound of all the different wind chimes:

CD-4/TR. 80

EXAMPLE 12-48. Chimes

Sleigh Bells; *Grelots* (FR.); *Sonagli* (IT.); *Schellen* (GER.) or . Sleigh bells are held in one or both hands and shaken.

CD-ROM
CD-5
SLEIGH BELLS

EXAMPLE 12-49. Sleigh Bells

CD-4/TR. 81
INDEX 1 / 0:00

Happily

Sleigh Bells

f *p* *ff*

Bell Tree. A metal beater is used to stroke the small bells on the tree in an upward or downward motion, as specified.

CD-ROM
CD-5
BELL TREE

EXAMPLE 12-50. Bell Tree

CD-4/TR. 81
INDEX 2 / 0:17

Slowly

Bell Tree

f *p* *pp*

Brake Drum (Brake Dr.). Automobile brake drums come in various sizes. They are played with drum sticks or brushes, like any other drum. Metal plates are often substituted for brake drums because of their more ringing sound; see especially Copland's *Connotations* (at the end), his Symphony No. 3, and Rouse's *Phaelon* (toward the end).

CD-ROM
CD-5
BRAKE DRUM

EXAMPLE 12-51. Brake Drum

CD-4/TR. 82
INDEX 1 / 0:00

Brake Dr.

sf

Thunder Sheet. This large sheet of metal suspended on a stand may be struck with a beater or shaken by hand.

CD-ROM
CD-5
THUNDER SHEET

EXAMPLE 12-52. Thunder Sheet

CD-4/TR. 82
INDEX 2 / 0:11

Thunder Sheet

p *fff*

Wooden

Wood Blocks (W. Bl.); *Blocci di legno cinese* or *Cassetina* (IT.); *Blocs de bois* (FR.); *Holzblöcke* (GER.). Wood blocks, rectangular pieces of hard wood, come in sets of graduated sizes, from three to five each. When several wood blocks are called for, they are either mounted or placed in a set on a table or a stand. Even though they are considered nonpitched instruments, the different-sized blocks produce a spectrum of indefinite pitches from low (the largest block) to high (the smallest block). Their sound is incisive, penetrating, and very dry. Drumsticks, as well as marimba, wooden, plastic, or rubber mallets are all effective beaters. If only one wood block is used, it can be held in one hand and

CD-ROM
CD-5
WOOD BLOCKS

struck with a mallet held in the other hand. These blocks are very apt at playing a single *secco* sound, rolls, or fast passages.

CD-4/TR. 83
INDEX 1 / 0:00

EXAMPLE 12-53. Wood Blocks

Tempo di Valse

3 W. Bl.

1st time *f*
2nd time *pp*

CD-ROM
CD-5
TEMPLE BLOCKS

Temple Blocks (T. Bl.); ***Blocci di legno coreano*** **(It.);** ***Temple-blocs*** **(Fr.);** ***Tempel-Blöcke*** **(Ger.).** Temple blocks are a graduated series of five clam-shaped wooden blocks mounted on a stand. They are usually lacquered red and are of Asian origin. The technique of playing and the beaters are the same as for the wood blocks, but they sound more resonant, more mellow, and more hollow. Because temple blocks are more fragile than wood blocks, hard mallets must be used carefully, and hard rubber or plastic mallets and wooden sticks should be avoided.

The music for temple blocks is also similar to that for wood blocks, with *secco* single strokes, rolls, and fast passages predominating.

CD-4/TR. 83
INDEX 2 / 0:25

EXAMPLE 12-54. Temple Blocks

5 T. Bl.

1st time *f*
2nd time *p*

CD-ROM
CD-5
CLAVES

Claves. This instrument of Latin American origin consists of two cylindrical pieces of hard wood, each approximately one inch in diameter and approximately six inches long. One of the claves is lightly cradled by the fingers of one hand and struck incisively by the other clave held in the other hand. The cupped hand acts as a resonator. The sound is like that made when striking the highest wood block very hard, but it has more resonance and carries a certain "ping" (a term that some percussionists use to characterize this sharp articulation). Claves are usually used to play ostinati (the main underlying rhythm) in Latin American rumbas, congas, and sambas, but have also been used in orchestral music to reinforce *secco* chords or as an alternative to wood-or temple-block sounds.

CD-4/TR. 84
INDEX 1 / 0:00

EXAMPLE 12-55. Claves

Claves

f

CD-ROM
CD-5
CASTANETS

Castanets (Cast.). Castanets are probably of Mediterranean origin and have been in existence for hundreds of years. Some Spanish and Italian composers of the seventeenth and eighteenth centuries wrote concertos for castanets and strings. They have often been used in the orchestra to suggest Spain or Spanish subjects, as in the famous "Seguidilla" from Bizet's *Carmen*. Today, composers use them to emphasize rhythms or to reinforce sharp attacks.

The instrument is made of two small, hardwood, spoon-shaped shells that are struck together. There are three kinds of castanets:

1. Hand castanets: usually two pairs, one held in each hand. These require considerable skill to play and are rarely found in the orchestra.
2. Paddle castanets: a pair of castanets are mounted, one on each side of a wooden paddle. These are easy to play and can have a very loud dynamic.
3. Concert castanets: castanets that are mounted on a board. The lower castanet is stationary and connected to the upper one by a spring. The upper castanet is clicked against the lower with a finger or a drumstick. This newest type of castanet is the one most commonly used in the orchestra.

EXAMPLE 12-56. Castanets

CD-4/TR. 84
INDEX 2 / 0:12



Sand Block or Sandpaper Block (Sand Bl.). This instrument consists of two small blocks whose bottom side is covered with sandpaper. The sandpaper surfaces are brought together and rubbed against each other, sounding like a soft-shoe dance. They can produce separate, short, coarse strokes, rhythmic passages, or rolls. If you want an especially harsh sound, you should specify that the sandpaper be especially coarse. If the opposite effect is desired, request fine or medium sandpaper.

CD-ROM
CD-5
SAND BLOCKS

EXAMPLE 12-57. Sand Blocks

CD-4/TR. 85
INDEX 1 / 0:00

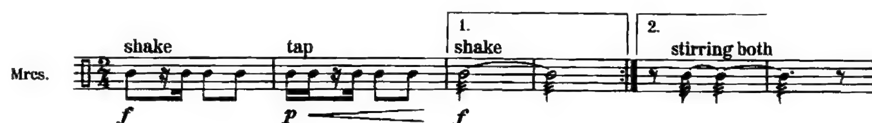


Maracas (Mrcs.). O— The maracas, another Latin American instrument, usually come in pairs, although if they are played in a non–South American context, one usually suffices. The instrument is made of a gourd or wood or plastic shell filled with pebbles or seeds. It may be shaken or slowly twirled (stirred); the latter is very effective as a *pianissimo* roll (solo). Simply tapping the maraca with one hand to produce the effect of a short note is also possible. In Latin American dances maracas usually play ostinato patterns, but in orchestral contexts the sizzle of the maraca has always had a special charm.

CD-ROM
CD-5
MARACAS

EXAMPLE 12-58. Maracas

CD-4/TR. 85
INDEX 2 / 0:13



Other South American instruments that sound similar to the maracas are the *chocallo*, the *kameso*, the *cabaza*, and the rain stick.

Jawbone; Vibraslap. This Latin American instrument is related to the maracas, since it also rattles. It looks like the jawbone of a donkey—in fact, it

CD-ROM
CD-5
JAWBONE

originally was just that, with teeth still in it. The player holds it in one hand and strikes it toward the top with the fist of the other hand, making a sound that resembles loose teeth rattling. Usually only single strokes are written for this instrument, since each will buzz for a time commensurate with the force of the blow.

CD-4/TR. 86
INDEX 1 / 0:00

EXAMPLE 12-59. Jawbone



CD-ROM
CD-5
GUIRO

Guiro; *Rapé guiro* (FR.). This is a large gourd shaped like a bottle, with a serrated side on which the player scrapes back and forth with a wooden stick or scraper. It has been used a great deal in Latin American dance bands; in addition, many orchestral composers have written for it instead of for the European ratchet or rattle, or for the sandpaper blocks, which as a rule would sound too soft in certain orchestral passages. Single strokes as well as rolls are possible.

CD-4/TR. 86
INDEX 2 / 0:11

EXAMPLE 12-60. Guiro



Another South American instrument similar to the guiro is the Brazilian *reco-reco.*

CD-ROM
CD-5
RATCHET

Ratchet (Ratch.); *Raganella* (IT.); *Erécelle* (FR.); *Ratsche* (GER.). This instrument simulates a child's ratchet. It is constructed of a grooved cylinder and a hard tongue of wood or metal, held in a frame. When the teeth of the cylinder are rotated against the tongue by a handle, they catch and make a loud clacking sound. The instrument is best used for loud dynamic passages and for rolls, since single strokes are risky and would work much better on the guiro.

CD-4/TR. 87
INDEX 1 / 0:00

EXAMPLE 12-61. Ratchet



CD-ROM
CD-5
SLAPSTICK

Slapstick or Whip; *Frusta* (IT.); *Fouet* (FR.); *Peitsche* (GER.). In Europe this instrument is usually called a whip, in America a slapstick. It is constructed of two strips of thin hard wood tied together into a paddle held by a string. When clapped together, the two pieces of wood produce a single very hard stroke. This instrument is usually used to emphasize a *sforzando*.

CD-4/TR. 87
INDEX 2 / 0:14

EXAMPLE 12-62. Slapstick



CD-ROM
CD-5
LOG DRUM

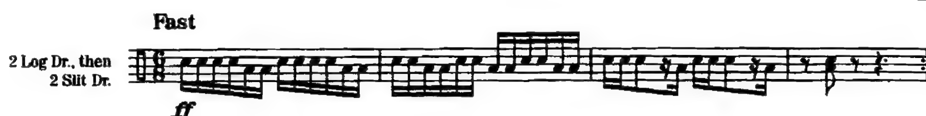
Log Drum (Log Dr.) and Slit Drum (Slit Dr.). These are Mexican Indian and African instruments, respectively. The log drum is a hollowed-out

log plugged up at each end, with a slit made along the entire surface on one side. Two tongues are cut into the log across the slit, dividing the wood into two different lengths, producing two different pitches when the wood is struck on the sides next to the tongue openings. Several sizes and thicknesses of the log drum produce a spectrum of pitches; you can even specify well-defined pitches on this instrument.

Slit drums are similar in construction, but look more manufactured. The sound is produced by hard marimba mallets striking the drums on either side of the slits. The intervallic relationships, depending on the thickness of the drum, can be a 3rd or, more often, a perfect 4th or even a 5th. They can easily take the place of wood or temple blocks, but will give a darker sound.

EXAMPLE 12-63. Log Drums and Slit Drums

CD-4/TR. 88



Hammer; *Holtzhammer* (GER.). A hammer is sometimes called for (Mahler, Symphony No. 6 and Rouse, Symphony No. 1), usually to strike either a piece of wood or a metal plate. Often a large wooden box (sometimes as big as five feet square) is constructed to be struck by the hammer, giving a tremendously loud sound. A wooden or metal hammer is usually specified in the score.

Membranophones

Snare Drum (S. Dr.); *Tamburo piccolo* (IT.); *Caisse claire* (FR.); *Kleine Trommel* (GER.)

CD-ROM
CD-5
SNARE DRUM

▨ with snares; ▭ without snares

The snare or side drum has long been a member of the symphony orchestra, and even longer in the opera orchestra. The instrument has two heads: the top, or playing head, is called *batter*; the bottom head, which has the snares (made of cat gut, wire, or nylon) stretched across it, is called *snare*. The snare drum has a switch on the side which, if loosened, shuts off the snares and makes the instrument sound like a tom-tom. With the snares on, the instrument has a crisp, sharp sound and is excellent for playing concise rhythmic patterns. There are four basic strokes besides the single left-right stroke. In the first three, the grace notes precede the accented note unless otherwise specified:

1. flam ♪♩
2. drag ♫♩
3. four-stroke ruff ♬♩
4. roll 𝅗𝅥 (tr) or 𝅗𝅥 ♩|♪

The player may place a cloth on the batter to mute the instrument. You should designate this effect as "cover head." Another effect that is used quite frequently is the rim shot, a very sharp sound produced by placing one stick in the middle of the head and rim and then hitting the stick with the other stick.

The instruction to the player should read: "rim shot," or the abbreviation "r.sh."; recently, some composers have adopted Elliott Carter's symbol, , but if this is used it should be explained at the front of the score.

Wooden sticks are the normal beaters for the snare drum, although wire brushes are used for soft effects, especially in jazz.

CD-4/TR. 89 INDEX 1 / 0:00

EXAMPLE 12-64. Snare Drum

a.

Allegro

S. Dr.

1st time *ff*
2nd time *pp*

r.sh.

sf

CD-4/TR. 89 INDEX 2 / 0:28

b.

S. Dr.

f

2nd time without snares

r.sh.

For trills the notation is preferred.

ADDITIONAL PASSAGE FOR STUDY

Nielsen, Clarinet Concerto (obbligato snare drum solo throughout)

CD-ROM CD-5 TENOR DRUM

Tenor Drum (Ten. Dr.); *Cassa rullante* (IT.); *Caisse roulante* (FR.); *Wirbeltrommel* or *Rührtrommel* (GER.) □

The tenor drum is found quite frequently in both bands and orchestras. It has a deep, resonant sound and shares the same basic techniques as the snare drum, although it has no snares. Wooden sticks serve as beaters, though timpani mallets and marimba mallets can also be used effectively. Many of these drums have a head on the bottom as well as on the top.

CD-4/TR. 90

EXAMPLE 12-65. Tenor Drum

1 Fast

Ten. Dr.

ff

5

p *ff*

Field Drum (Field Dr.)

This drum with snares is seldom used in orchestras. It has the same circumference as the tenor drum but a deeper shell, and is therefore lower in pitch. The field drum has a darker, less crisp sound than the snare drum and is played with large snare drumsticks. The same techniques apply to both, however.

EXAMPLE 12-66. Field Drum

CD-4/TR. 91



Bass Drum (Bs. Dr.); *Gran cassa* (IT.); *Grosse caisse* (FR.); *Grosse Trommel* (GER.)

CD-ROM
CD-5
BASS DRUM

Because the bass drum has such tremendous power, it can easily drown out the rest of the orchestra when *fortissimo* strokes or rolls are played on it. Therefore, you must be careful when writing for it, and careful not to overuse its powerful effects. The bass drum's response is a bit slower than that of the smaller drums, but it is very effective in playing slow repeated notes as well as fast, *secco* isolated strokes.

The instrument has two heads, both of which can be used for playing if the instrument is standing upright on its side (⦶). The bass drum can also be laid flat (⊖). It is effective in soft passages as well as loud ones, adding tremendous weight to the percussion section in the latter. It can begin or end a percussion passage with a single stroke (Copland, Symphony No. 3, second movement, beginning). It can also simulate distant thunder, or evoke a feeling of impending doom with a *pianissimo* roll. In older symphonic literature it was often used to depict war or belligerent hostility.

Usually the bass-drum player uses a mallet resembling a timpani mallet but that is larger, softer, and with a little more felt on the head. Wooden sticks are also used for strokes and rolls.

EXAMPLE 12-67. Bass Drum Strokes

CD-4/TR. 92
INDEX 1 / 0:00



EXAMPLE 12-68. Bass Drum Strokes and Rolls

CD-4/TR. 92
INDEX 2 / 0:24



Tom-Toms □

CD-ROM
CD-5
TOM-TOMS

These membranophones occupy a gray area between definite and indefinite pitch, for tom-toms can be tuned to approximate pitches, if desired. They come on two stands, each with a pair mounted on it, and are pitched from high to low in four different voices. Tom-toms are best notated on the four spaces of the staff to show this pitch differentiation. The drums with one head look like smaller tenor drums. Their sound is crisp and articulate. Those with two heads, which actually sound more like tenor drums, are most often used in jazz bands, but if the composer so specifies they can be available in a symphony orchestra.

They have greater sustaining power than the single-headed tom-toms and are deeper and more somber in sound; some have said, however, that the two kinds of tom-toms are interchangeable because listeners really cannot tell the difference between them.

Yarn or cord mallets, or regular snare drumsticks, are the most common beaters used. The playing technique is similar to that of the snare drum. Much of the music written for tom-toms incorporates gestures written for wood blocks and temple blocks, with which tom-toms often carry on a dialogue in the orchestra.

CD-4/TR. 93

EXAMPLE 12-69. Tom-Toms

Fast

4 Tom-Toms

1st time *ff*
2nd time *pp*

6

CD-ROM
CD-5
TIMBALES

Timbales (Timb.); *Timpanetti* (It.); *Timbales cubaines* (Fr.); *Kuba-Pauken* (Ger.)

The timbales come in pairs, fastened to a metal stand like the one-headed tom-toms. These one-headed drums are often mistaken for tom-toms, but their metal shell of about snare-drum depth gives them a more metallic and piercing sound. They are of Latin American origin and come in only two sizes: 13 inches and 14 inches in diameter, one a high drum and the other low.

There are several ways to play timbales:

1. with timbale sticks, which are wooden dowels, thinner and lighter than snare drumsticks;
2. with marimba mallets;
3. with the hands;
4. with any kind of mallet or stick on the rim, in the center of the drum, or in a rim shot.

CD-4/TR. 94

EXAMPLE 12-70. Timbales

Fast

2 Timb.

1st time *ff*
2nd time *pp*

CD-ROM
CD-5
BONGO DRUMS

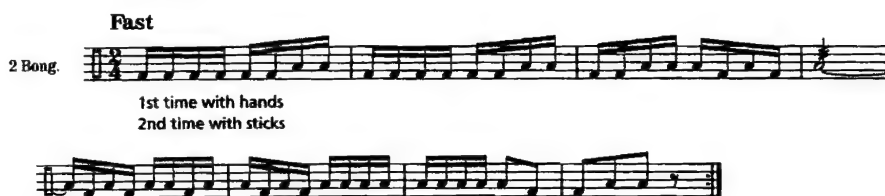
Bongos (Bong.)

The bongos, single-headed drums of Latin American origin, always come in attached pairs and are indefinitely pitched. Professional bongos have a tightening apparatus on the rim and are usually adjusted to be a perfect 4th or 5th apart. Most musical organizations have only one set of bongos, but four sizes are manufactured—low, high, higher, and highest—and it is now safe to write for two sets. Primitive bongos are simply skin over shell and cannot be changed in tuning.

Bongos are traditionally held between the knees and played by hand. However, they can be mounted like timbales and played by hand or with snare drumsticks, any kind of mallet, or even very softly with brushes. Professional bongo players have developed a specialized technique with which extraordinary feats can be performed on the instrument. The ordinary orchestral percussion player cannot be expected to be proficient in that type of playing, but he or she should be able to play drum techniques on this instrument that are typical of the tom-tom.

EXAMPLE 12-71. Bongos

CD-4/TR. 95



Conga Drum (Conga); *Tumba* (IT.)

CD-ROM
CD-5
CONGA DRUM

This Latin American bass drum is used quite often in the symphony orchestra today. It stands about thirty inches high, and its single head is about eleven inches in diameter. The typical conga drum has a reverse hourglass figure. The drum is best played with the hands, but all types of mallets may be used. By striking the head near the rim, the player can get a higher pitch than by hitting the center of the head; if a composer desires two different pitches, he or she must clearly indicate this in the notation by using two different lines or spaces for the two pitches.

EXAMPLE 12-72. Conga Drum

CD-4/TR. 96



Tambourine (Tamb.); *Tamburo basco* (IT.); *Tambour de basque* (FR.); *Tamburin* (GER.)

CD-ROM
CD-5
TAMBOURINE

The tambourine, like so many percussion instruments, has ancient origins, and we find mention of it in the Bible. It evokes thoughts of Spain, but is used for all kinds of music today. The instrument is basically a shallow drum consisting of a single-head skin fastened over a wooden hoop. Around this wooden frame are several slots with pairs of small disc cymbals that jingle when the instrument is struck or shaken. Since there are several sizes of tambourines, you should specify the large 15-inch, medium 10-inch, or small 6-inch model. If there is no particular specification, the player will usually use the 10-inch instrument.

There are several playing techniques:

1. striking the instrument with the knuckles;
2. playing it softly with the fingers;
3. shaking it (notated like a roll), usually used for loud rolls;

4. playing a thumb roll or trill, usually used for soft rolls (this must be spelled out in the part; see below);
5. using all kinds of sticks and mallets, if the instrument is placed on a stand or chair;
6. placing it on other percussion instruments, such as the timpani, snare drum, or bass drum, and playing it with a mallet.

CD-4/TR. 97

EXAMPLE 12-73. Tambourine

CD-ROM
CD-5
QUICA

Quica; String Drum (String Dr.) or Lion's Roar

The shape of the quica, a Brazilian instrument, is that of a large, deep bongo. The quica is a single-headed drum with a pole embedded inside in the center of the drum head. The pole is stroked or rubbed with a damp sponge or cloth, which makes the skin of the drum head vibrate to produce a sound. Usually the instrument's shell consists of a large wooden bucket; the larger the bucket the louder the sound.

The string drum or lion's roar is similarly constructed but has a tight, rosined string or leather strap instead of a pole, which is often tied on the outside of the drum head to a round piece of wood. When this piece of wood is turned it grips the string, then lets it go. This sets up vibrations throughout the head and shell and produces a sound very much like an actual lion's roar.

These instruments are used with great frequency today, in such pieces as Christopher Rouse's *Infernal Machine* and Edgard Varèse's *Amériques*.

CD-4/TR. 98

EXAMPLE 12-74. Quica

ADDITIONAL PASSAGE FOR STUDY

D. Dratell, *Throb*

Aerophones

Sirens

Many twentieth-century composers have used sirens, especially Edgard Varèse, George Antheil, and Paul Hindemith, to paint a realistic picture of "modern" society. If you wish to use sirens, you should designate the volume and the type of siren, such as high, shrill, ringing, and so on. The notation is not standardized, but could be on one line, showing the duration and dynamic.

Motor Horns

Motor horns of all kinds have been used, especially in early twentieth-century pieces (such as Gershwin's *An American in Paris*) in which urban life is to be evoked. All these effects must be used very carefully, for most of them by now have become clichés.

Wind Machine

The wind machine is a large cylindrical wood frame covered with canvas. The player rotates it by turning a handle. The canvas is stroked by thin pieces of wood, creating a kind of swirling and whistling sound as the revolutions accelerate. The result is a very realistic wind effect. The successful use of a wind machine in Richard Strauss's *Alpine Symphony* and *Don Quixote* prompted other composers to experiment with it as well, such as, for instance, Morton Gould in "Fire Music" from *Audubon*.

ADDITIONAL PASSAGES FOR STUDY

Passages for a Combination of Percussion Instruments:

Chabrier, *España* (large percussion section)
M. Colgrass, *As Quiet As*, third movement (large section plays *pianissimo*)
Jolivet, Symphony No. 2, first movement, from [34] to end (large combination)
Messiaen, *Trois petites liturgies*, second movement (large percussion section plus piano and ondes martenot)
Ravel, *Alborado del gracioso*, starting 20 mm. from end (large combination)
R. Sierra, *Evocaciónes III*, Caprichoso (vibraphone, guiro, and many other percussion instruments)
Tan Dun, *Gitimalia* (marimba, six tuned cowbells, two harps, and amplified guitar)
J. Tavener, *Celtic Requiem*; *Ultimos ritos*; *The Whale* (large percussion ensembles, plus bagpipes, saxophones, and organ)
Varèse, *Amériques* (nine percussion players, two harps, and two timpani players)
Varèse, *Offrandes* (harp plus large percussion section)
Wagner, *Das Rheingold*, Scene II (large combination)

Passages for Instruments Less Often Used in the Orchestra:

Chen Yi, *Chinese Myths Cantata* (combination of Chinese and Western percussion instruments)
A. Kernis, *Lament and Prayer* (Asian bells)
Messiaen, *Turangalîla-symphonie* (ondes martenot)
M. Rosza, music from the music *Spellbound* (theremin)
Tan Dun, *Li Sao* (three bamboo flutes and four percussionists)
D. Ward-Steinman, *Rituals* for Dancers and Musicians (steel drum, African drums, koto, marimba, prepared piano)
R. Wernick, *Kaddish-Requiem* (sitar, tape)

13

Keyboard Instruments

Keyboard instruments have been a part of the orchestra for as long as it has existed, even if their function within it has varied. During the Baroque the harpsichord or sometimes the organ was used as a continuo instrument to realize the underlying figured-bass harmony. This practice continued well into the eighteenth century, in the early Haydn and Mozart symphonies, as well as the works of Bach's sons and those of the Mannheim school of composers. The continuo parts in these works were performed on the harpsichord, the organ, or later the fortepiano, the ancestor of the modern piano. Of course, during this period keyboard instruments were also popular as solo instruments accompanied by the orchestra.

Starting at the end of the nineteenth century keyboard instruments—particularly the modern piano and the celesta—were used as regular members of the symphony orchestra, their parts woven into the orchestral fabric in the same manner as those assigned to string, wind, brass, or percussion instruments. Each keyboard instrument has been exploited not for its ability to play complete chords as a continuo instrument but rather for its own unique timbre, for its ability to play several melodic lines simultaneously, or for its soloistic capabilities. Today every standard orchestral organization employs at least one full-time pianist who doubles also on harpsichord and celesta, when needed. The large orchestras also retain a part-time organist for those occasions where that instrument is included in a score. The very special functions of the keyboard instruments that have been used in the orchestra are of primary interest to us in this chapter. For more information about this ever-expanding group of instruments, please see the list of books and journals in Appendix B.

Piano

Pianoforte (It.); Klavier (Ger.)

The piano is perhaps the best known and most versatile of all musical instruments in use today. The piano has probably been featured in more solo concertos than any other instrument. Yet even though it has been available in some form or another since the eighteenth century, the piano did not become an

orchestral instrument until the latter part of the nineteenth century* and has been extensively used in that medium only in the twentieth. It is clear from studying orchestral scores that the innovative use of the piano as an orchestral instrument occurred first in France, since it first appears in the scores of Saint-Saëns, D'Indy, Debussy, and Stravinsky.



The piano as an orchestral instrument normally is used in the following ways:

1. As the solo instrument in a piano concerto.
2. As the performer of an obbligato part, as in Bloch's Concerto Grosso No. 1 or Stravinsky's *Petrushka,* and other works (Saint-Saëns's *Carnival of the Animals* and Symphony No. 3 use two pianos to play the obbligato).
3. As a purely orchestral instrument, as in Debussy's *Printemps,* Frank Martin's Symphony No. 4, Shostakovich's Symphonies Nos. 1 and 5, Copland's Symphony No. 3, Prokofiev's Symphony No. 5, Sessions's Symphony No. 2, Michael Colgrass's *As Quiet As,* and many other works.

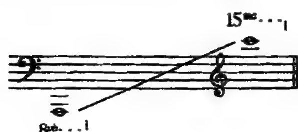
   In this capacity, the piano is usually used to double a passage or emphasize a *secco* chord or note, with its extreme registers employed more often than those at the middle of the instrument. Doublings of the piano with strings, woodwinds, and brass in any combination are also successful. In some instances the piano is used instead of a harp, playing arpeggios in *fortissimo* passages where the latter would be completely obliterated. Occasional solos may be assigned to the piano for contrast, but since the instrument is usually placed somewhere in back of the orchestra, these featured passages do not convey the impression of a solo in a particular work.
4. As a percussion instrument, substituting for or contrasting with the xylophone, marimba, or vibraphone; at the bottom of its range the piano can also reinforce the timpani or bass drum.
5. As a filler instrument; in many nonprofessional and school orchestras a piano is often used to fill in for instruments that may be lacking, such as the oboe, bassoon, or viola. This purely pragmatic function will be discussed in more detail in Chapter 16.

*During the entire nineteenth century, when the harpsichord was virtually forgotten, the piano was often used as a continuo instrument for the performance of works from the Baroque period. Historical documentation shows us that the piano, too, was abandoned for this purpose when conductors realized figured basses with woodwind instruments. Typical were the arrangements of Vivaldi concerti made by Alexander Siloti, a Russian pianist and pedagogue, which were popular during the first decades of the twentieth century.

Range

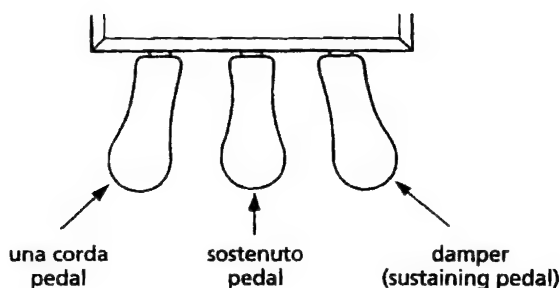
The piano has the greatest range of any instrument used in the orchestra, other than the organ, discussed below.

EXAMPLE 13-1. Range



The Three Piano Pedals

The most frequently used of the three pedals on a piano is the damper pedal, which when depressed lifts all the dampers and permits the strings to vibrate even after the key has been released. This pedal is found on all pianos, both grand and upright. The *una corda* pedal, the next most used, when depressed on a grand piano moves the hammers into a position where they can strike only one or in some cases two of the three strings of one pitch (*una corda* means "one string"). On an upright piano this pedal moves the hammers closer to the strings. On both grand and upright pianos this pedal is designed to soften the tone of the instrument. The center pedal, called the sostenuto pedal, is the least frequently used since it is the newest to be added to the piano; the sostenuto pedal sustains only those pitches that are depressed at the same time the pedal is put into action. It is most useful for bass-note pedal points, which can be sustained while other pitches are played over them (in fact, it is ineffective on notes above middle C). Either of the other two pedals may be used at will without affecting the pedal-point note(s). Unfortunately, many older pianos, as well as European pianos and a great majority of uprights, do not have the sostenuto pedal, so it is a risk to write for it. Nevertheless, orchestral pianos, which are usually nine-foot grands, would most certainly have it.



Some people refer to the right pedal, the damper, as the sostenuto; however, using the term in this way can lead to confusion; therefore in the score it is best to use the names given above. In English, however, we often refer to the

damper pedal as the sustaining pedal, since the sound is sustained by depressing it.

Novel Effects on the Piano

Other uses of the piano that have been employed within the last few decades are the following:

1. Prepared piano, as indicated in the score, means that various objects (nails, bolts, etc.) are placed either on top of the strings or wedged between them.
2. The piano strings may be struck with various beaters or brushes to sound like mallet percussion or dulcimers.
3. The piano strings may be plucked either *secco* or allowed to vibrate.
4. Roaring bass tremolos, which simulate a whole battery of bass drums, can be performed by depressing the damper pedal and playing a tremolo inside the piano, with both hands alternating on the lowest strings.
5. Some composers (for example, Bernstein in *The Age of Anxiety*, Copland in *Billy the Kid*) ask for upright pianos to suggest the "local color" of the barroom or music hall.
6. Toy and player pianos may be employed to give a special effect (as in works by Conlon Nancarrow and in Colgrass's *As Quiet As*).

There are some extraordinary works in which multiple pianos and percussion constitute the entire orchestra. Two of the most important are Stravinsky's *Les Noces* and Orff's *Catulli carmina*.

Orchestral Uses of the Piano

Following are some successful uses of the piano in its various functions as an orchestral instrument.

As a Doubling Instrument

Stravinsky writes a striking piano part that doubles the woodwinds to give that section an extra "ping" and the entire passage a very fresh articulation. He later made an arrangement of this dance for piano solo.

CD-5/TR. 1

EXAMPLE 13-2. Stravinsky, *Petrushka*, First Tableau, Russian Dance, mm. 1–9

Allegro giusto ♩ = 116

Similarly, in this example Shostakovich reinforces the high strings and upper winds with the cutting sound of the upper piano register, which gives the passage a real edge.

EXAMPLE 13-3. Shostakovich, Symphony No. 1, second movement, mm. 113–118 CD-5/TR. 2

As an Accompanying Instrument

Here the piano fulfills the function of a traditional chordal accompaniment to the clarinet solo. Only the bass notes of the piano are doubled, very softly, by pizzicato string basses; the percussion reinforces the piano's rhythm.

CD-5/TR. 3

EXAMPLE 13-4. Bernstein, *On the Town*, "Times Square," mm. 1–5

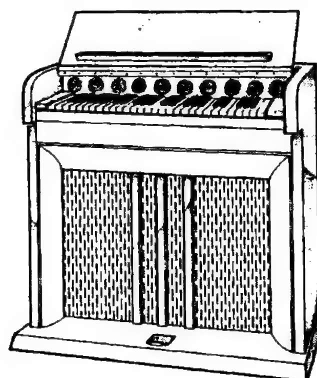
*Traps, one player.

ADDITIONAL PASSAGES FOR STUDY

Berg, *Lulu Suite*, "Ostinato," mm. 37–45
Bernstein, *The Age of Anxiety* (offstage piano)
Copland, Symphony No. 3, second movement, mm. 115–120
J. Corigliano, Symphony No. 1 (offstage piano)
Shostakovich, Symphony No. 5, first movement, at [5] (piano and pizzicato strings)
Stravinsky, *Les Noces*, "Chez le maire," [27] to [50] (four pianos and percussion)
Stravinsky, *Oedipus Rex*, at [19], mm. 1–11
Stravinsky, *Petrushka*, Second Tableau (study piano part throughout)
Stravinsky, *Symphony of Psalms*, last movement, beginning, and at [22], "Laudate" to the end (two pianos)

CELESTA

Céleste (Fr.)



The celesta, a steel-bar piano, is probably used more frequently in the orchestra than any other keyboard instrument. It looks like a miniature version of the piano, although it sounds very much like a glockenspiel. Its tone is soft and delicate, even though because of its high frequencies it has a penetrating sound; it is by no means as piercing as the glockenspiel, however.

The celesta's range spans four octaves:

EXAMPLE 13-5. Range (sounds one octave higher than written)



The mechanism of the celesta works in the following manner: felt hammers strike steel bars, which lie across a small wooden resonator box. One cannot play a true, short staccato on this instrument since the pitches are sustained by the resonator. The instrument has a damper pedal to sustain pitches even further, but this effect is much more subtle than on a piano.

Melodic lines, chords, and arpeggios are all effective on the celesta, which is usually played by the pianist of the orchestra. Besides solo celesta passages, some of the most exciting pages of music for this instrument occur when it doubles any combination of strings, harp, piano, and soft woodwinds, where it gives a silvery sheen to the overall sound.

Here are some outstanding examples of celesta passages. The first constitutes one of the most famous and effective passages for the celesta, here used as a solo instrument.

CD-5/TR. 4

EXAMPLE 13-6. Tchaikovsky, *The Nutcracker*, "Dance of the Sugar Plum Fairy," mm. 5–12

Andante

Cel.

In his opera *Der Rosenkavalier* (Example 13-7) Richard Strauss beautifully highlights any mention of the romantic symbol of the rose with a unique orchestral coloring that features the celesta. In the next example, the celesta doubles the flutes, piccolos, harps, and violins in the introduction to Octavian's aria.

ADDITIONAL PASSAGES FOR STUDY

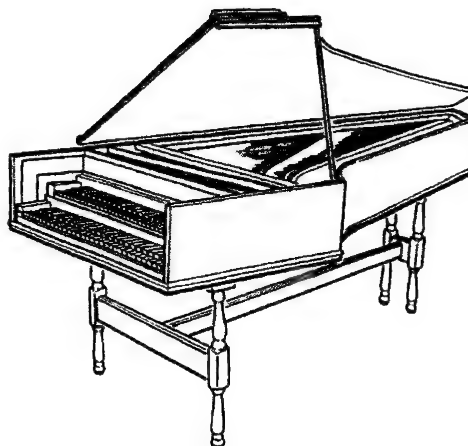
Babbitt, *Relata I* (xylophone, marimba, vibraphone, celesta, harp and piano)
Bartók, *Music for Strings, Percussion, and Celesta*, third movement, mm. 34–43
Berio, *Concertino*, mm. 1–6 (celesta)
L. Foss, *Time Cycles*, second movement, mm. 171–175
Grofé, *Grand Canyon* Suite, "On the Trail" (extensive celesta cadenza toward the end)
S. Gubaidulina, *Offertorium* (two harps, celesta, and piano)
Holst, *The Planets*, "Venus" (final 11 mm.) and "Mercury" (end)
A. Hovhaness, *As on the Night* (celesta in different key from the strings)
Respighi, *The Fountains of Rome*, fourth movement, [20] to end
Shostakovich, Symphony No. 5, first movement, last 4 measures
Schreker, *Kammersymphonie*, first movement, beginning to [3] (piano, celesta, harmonium)
S. Silver, *Three Preludes* for Orchestra, Prelude No. 2 (celesta, harp, and piano)
Toch, *Chinese Flute*, "Procession of the Monks" (celesta in different key from the strings)

EXAMPLE 13-7. R. Strauss, *Der Rosenkavalier*, Act II, Octavian's aria "Mir ist die Ehre," 4 mm. before [25]

CD-5/TR. 5

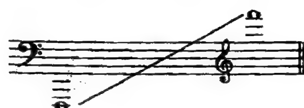
HARPSICHORD

Cembalo (IT. AND GER.); *Clavecin* (FR.)



The harpsichord is a plucked string instrument: instead of being struck by hammers, the strings are plucked by crow quills or leather tabs. Usually five to eight pedals or hand-pulled pistons operate register stops; on the big harpsichords with two keyboards a coupler combines the keyboards' registrations. The pistons and coupler afford a great deal of variety in tone quality and, when the keyboards are joined together, add strength to the instrument. Some harpsichords, called pedal harpsichords, have a full organ pedal keyboard, operated by the feet. These are rare, and the orchestrator has to request them specially.

EXAMPLE 13-8. Range



During the Baroque era and even in some of the early Haydn symphonies, the harpsichord was always present in the orchestra to realize the continuo parts. When the orchestra expanded and the style changed this instrument was no longer needed as an integral part of the ensemble; because of its relatively small sound, it was replaced by the piano. For the last fifty years at least, there has been a renewed interest in building harpsichords and in using them as part of the orchestra to add additional color.

Take care that this rather delicate instrument is not overwhelmed. It is best heard alone or in combination with instruments capable of playing quite softly. Some composers have written for amplified harpsichord (Penderecki, *Partita*); in those cases the harpsichord is not at such a disadvantage.

Some successful recent uses of the harpsichord within an orchestral texture may be found in the following works: Falla's *Retablo de maese Pedro*, Frank Martin's *Petite symphonie concertante*, Richard Strauss's *Dance Suite after Couperin*, Carter's *Double Concerto*, and Mel Powell's *Miniatures for Baroque Ensemble*, given below.

EXAMPLE 13-9. M. Powell, *Miniatures*, fourth movement, mm. 1–5

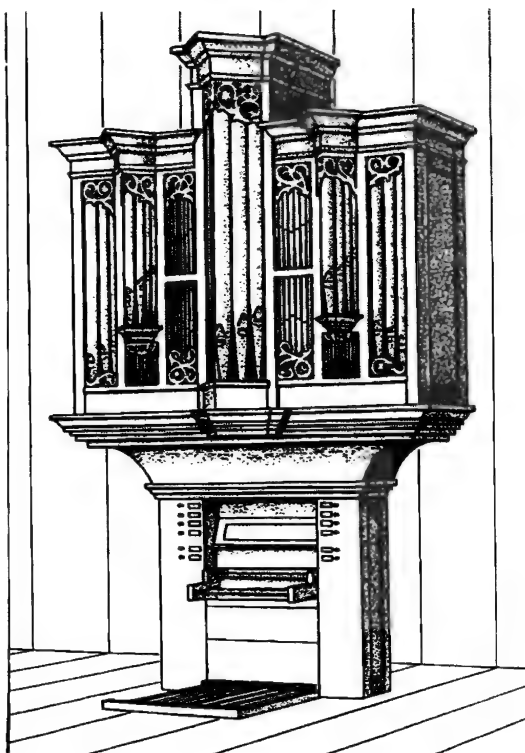
CD-5/TR. 6

ADDITIONAL PASSAGES FOR STUDY

M. Colgrass, *As Quiet As*, second movement
Falla, *Concerto for Harpsichord*, second movement
N. Sheriff, *Two Epigrams*
L. Trimble, *Four Fragments from the Canterbury Tales*, "Prologue," (voice, flute, clarinet, harpsichord)

ORGAN

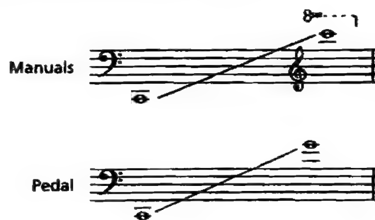
Organo (IT.); *Orgue* (FR.); *Orgel* (GER.)



The early history of the organ in the orchestra is a long one, extending back into the Baroque period. At that time it was indispensable as a continuo instrument and as a frequent soloist with orchestral accompaniment. But like the harpsichord, when musical style changed and continuo instruments were no longer needed, the organ was relegated to the church and disappeared as an integral member of the orchestra. It did, however, retain its position in the opera house, where it was used to depict a religious scene or feeling, such as in Meyerbeer's *Le Prophète*, Gounod's *Faust*, Halévy's *La Juive*, Verdi's *Otello*, Puccini's *Tosca*, and Wagner's *Lohengrin*. Even though solo music for organ was quite popular at the beginning and in the middle of the nineteenth century—with Mendelssohn, Schumann, Brahms, and Reubke writing major pieces for the instrument—it was not until Saint-Saëns's Symphony No. 3 that a major concert work was written with an organ part. Mahler (Symphony No. 8) and Strauss (*Also sprach Zarathustra*) ushered in a period of great orchestral writing for the organ. Quite a few organ concertos have been written in the past seventy years, and solo organ music from France, Germany, England, and the United States is voluminous.

The range of the organ is the greatest of all instruments in the orchestra. Example 13-10 shows the written range of the organ, without the 32-foot, 16-foot, 4-foot, or 2-foot extensions. If you wish to extend the range downward by one or two octaves, you must write +16′ or +32′ at the beginning of the passage. Similarly, if you want to extend a passage upward by an octave or two, you need to specify +4′ or +2′, respectively, on the score. Most organs do not have 32′ extensions; some do not have 2′ extensions.

EXAMPLE 13-10. Range



The organ's great attractions as an orchestral instrument are its ability to sustain pitches at a constant volume indefinitely, and the many color combinations it has available to complement or contrast with other orchestral colors. Unfortunately, many concert halls do not have a pipe organ, and often an electronic organ or a small positive organ with insufficient power and timbral capacity must be substituted for the large pipe organ that the composer had in mind.

Throughout the Saint-Saëns Symphony No. 3 the organ is well integrated into the fabric of the orchestra. In the following excerpt, from the first movement, it lends its sustaining quality to the lush string section, making the sound even more sensuous:

EXAMPLE 13-11. Saint-Saëns, Symphony No. 3, first movement, mm. 350–365

CD-5/TR. 7

350 Poco adagio ♩ = 60

Org. pp

Vln. 1 arco pp

Vln. 2 arco pp

Vla. arco pp

Vlc. arco pp

ADDITIONAL PASSAGES FOR STUDY

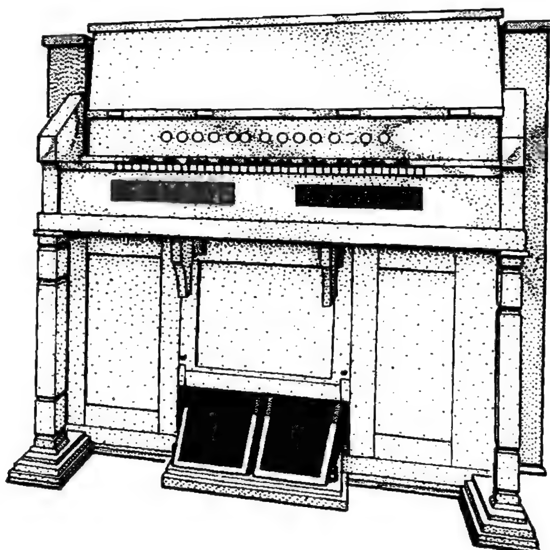
J. Corigliano, *Three Hallucinations* (electric organ)
Grainger, *Country Derry Air* (organ and orchestra)
Holst, *The Planets*, "Mars" and "Neptune" (extensive organ part all the way through)
E. Laderman, Symphonies No. 2 and No. 3
Respighi, *The Pines of Rome*, fourth movement, [20] to end
Shostakovich, *Romance on Pushkin Texts*
R. Strauss, *Also Sprach Zarathustra*, mm. 19–21

There are also extensive organ passages in some operas of Gounod, Mascagni, Puccini, Verdi, and Wagner, among others.

HARMONIUM

Organetto (It.)

The harmonium is a small pump organ, sometimes called a reed organ. It has either one or two keyboards and a range of five octaves. Some harmoniums have as many as fifteen organ stops that can change the tone quality and extend the range an octave higher and an octave lower. These instruments are rare today.



EXAMPLE 13-12. Range



The harmonium's mechanism works as follows: the player pumps two pedals below the keyboard, which work the bellows inside the instrument to set the air in motion. The air, in turn, activates the reeds when the keys are depressed.

Relatively few orchestral works use harmonium, although it did have a renaissance during the early part of the twentieth century (in works by Richard Strauss, Bartók, and Hindemith) and seems to be coming back into vogue again today—at least in Europe. The parts usually resemble organ parts without the pedal board. In the following example, the harmonium aids the singer by sustaining a harmonic accompaniment to the recitative. No other keyboard instrument except the organ could accomplish this task so well.

CD-5/TR. 8

EXAMPLE 13-13. R. Strauss, *Ariadne auf Naxos*, mm. 80–89

80 Recitative (schnell)

HAUSHOFMEISTER: Wie beliebt?

MUSIKLEHRER: Darf nicht! Das wird der Com-po-nist nie und nim-mer ge-stat-ten.

4 Vln. (2nd stand, 3rd stand) ff

4 Vla. (1st stand, 2nd stand) ff

4 Vcl. (1st stand, 2nd stand) ff

82

Harm.

HAUSHOFMEISTER: Wer wird? Ich höre: gestatten. Ich wüßte nicht, wer außer meinem gnädigen Herrn, in dessen Palais Sie sich befinden und ihre Kunstfertigkeiten heute zu produzieren die Ehre haben, etwas zu gestatten — geschweige denn, anzuordnen hätte!

MUSIKLEHRER: Es ist wi-der die Ver-ab-re-dung Die O-pera

2nd stand: pizz. p arco

3rd stand: pizz. p arco

1st stand: pizz. p arco

2nd stand: pizz. p arco

1st stand: pizz. p arco

2 Vlc. 2nd stand: pizz. p arco

84

Harm.
HAUSHOF-MEISTER
MUSIKLEHRER
1st stand

se-ria: A-riad-ne wur-de ei-gens für die-se fest-li-che Ver-an-stal-tung com-po-niert.

Und das ausbedungene Honorar wird nebst einer munificenten Gratifikation durch meine Hand in die Ihrige gelangen.

86

HAUSHOF-MEISTER
MUSIKLEHRER
2 Vlc. 2nd stand

Ich zweif-le nicht an der Zahl-ungs-fä-hig-keit ei-nes stein-reich-en Man-nes.

Für den Sie samt Ihrem Eleven Ihre Notenarbeit zu liefern die Auszeichnung hatten — Was dan steht noch zu Diensten?

Die-se

88

Harm.
MUSIKLEHRER

No-ten-ar-beit ist ein ern-stes, be-deu-ten-des Werk. Es kann uns nicht gleich-gül-tig sein,

ADDITIONAL PASSAGES FOR STUDY

P. Maxwell Davies, *Missa Super L'homme armé* (harmonium, harpsichord, celesta, and honky-tonk piano)
E. Laderman, *Magic Prison*
Webern, Five Pieces for Orchestra, Op. 10, No. 5, mm. 9–10, m. 15, m. 21

14

Scoring for Percussion with Keyboard Alone or in Combination

The versatility of the percussion section is virtually limitless. However, its overuse by the inexperienced orchestrator—perhaps in an attempt to cover up weak places in the composition but frequently obscuring important musical details—once led Walter Piston to say to his students, "When you write a *fortissimo* for the timpani doubled by bass drum, don't expect to hear anything else from the rest of the orchestra." We need to consider his admonition very seriously; even more than the entire brass section, a loud bass drum or cymbal roll can obliterate the entire orchestra, no matter how loud the tutti may be playing. In *The Art of Orchestration* Bernard Rogers wisely advises, "In writing for percussion, the sanctified tradition is the less the better."* In this chapter we will learn the virtues of restraint and caution by studying how the great composers, both past and present, have successfully used the orchestral percussion section in their scores.

In dealing with any instrument, choir, or section, we must recognize one fundamental, underlying issue: whatever instruments are used must be an organic part of the composition; in other words, they must sound inevitable, as if no other instrument(s) could be substituted. The selection of any instrument or group of instruments must serve the musical ideas of the piece and present them in the most effective manner possible.

This chapter is divided into two parts: the first, an extension of the previous two chapters, covers major issues of score placement as well as special notation for percussion and keyboard instruments; the second deals with the tremendously varied use of the percussion ensemble (including keyboard instruments) in combination with other choirs of the symphony orchestra.

Percussion Layout in the Full Score

Arrangement of Instruments

The percussion and keyboard section is traditionally placed between the brass and the strings on the score page, with the timpani appearing first. Since there are at most three to four percussion players in a symphony orchestra, not

*Bernard Rogers, *The Art of Orchestration* (New York: Appleton-Century-Crofts, 1951), p. 76.

including the timpanist and the keyboard player, and since these few percussion players are asked to perform on a multitude of different instruments, it is imperative that the composer or orchestrator arrange the percussion section of the score very carefully and that the notation be instantly legible.

There are many schools of thought concerning score setup, as will be shown in Examples 14-7 through 14-10. In this section we will establish an approach that is clear and logical; we recommend that you follow it when you create new scores. By not paying enough attention to the percussion setup on a score page, the composer or orchestrator risks having his or her intentions clouded by ambiguity or misunderstanding.

Order of Nonpitched Percussion

These instruments are most commonly ordered on the score page by one or both of the following criteria:

1. by height of pitches played, with the highest instrument at the top and the lowest on the bottom;
2. by the materials from which the instrument is constructed, such as:
   metal
   wood
   membrane

Since there are so many nonpitched instruments, let us take only a few of the most common and set them up in suitable score sequence according to the guidelines given above, remembering that as a group they are placed immediately below the timpani. We will rearrange the following instruments: snare drum, bass drum, triangle, tambourine, sleigh bells, wood blocks, tenor drum, temple blocks, cymbals, and tam-tam (of course, it is unusual to find even this set of percussion instruments playing at the same time in an orchestral work):

triangle
sleigh bells
cymbals
tam-tam
wood blocks
temple blocks
tambourine
snare drum
tenor drum
bass drum

Order of Keyboard Instruments

Next on the score page come the keyboard instruments. These instruments are usually placed below the timpani and the nonpitched percussion instruments, and are usually listed in descending order, the highest pitched instrument first:

glockenspiel
crotales

xylophone
vibraphone
marimba
chimes
celesta
piano
harpsichord
organ

Not all of these instruments are used in every score, but when any of them do appear they should be arranged in this sequence. If harps are also called for, they should be placed *above* all the keyboard instruments at a particular spot in a large work. Thus, a percussion section that consists of the following instruments: timpani, harp, xylophone, and celesta, would be set up in the following order:

timpani
harp
xylophone
celesta

If nonpitched percussion instruments were called for in the score, they would appear below the timpani and above the harp.

Assignment of Players

The assignment of a specific group of instruments to any one player is not of great importance unless:

1. The position of the instruments on the stage is predetermined by the instruments that are required in the score, as well as the amount of physical space allotted to the percussion section.
2. Two instruments must be played at the same time, in which case:
   a. the player will use a different mallet, beater, or stick in each hand;
   b. the player will use the same beater(s) for both instruments.

Player 1 — triangle, cymbal with stick, snare drum

Player 2 — tam-tam, tenor drum, bass drum

Player 3 — sleigh bells, wood blocks, temple blocks, tambourine

In the distribution of parts given above, all three players could strike two instruments at the same time by holding a different beater in each hand. They could perform a technique such as a drum roll only if they had the appropriate sticks in both hands.

Notation

All instruments, no matter where they are placed on the score, must be diligently labeled both at the beginning of the score and in the percussion parts. If three or four players are needed, be sure that each player is able to handle all the instruments required of him or her in the score and allow enough time for each player to go to his or her next instrument or group of instruments.

As we mentioned in Chapter 12, the notation for the pitched percussion instruments will use five-line staves with treble or bass clefs; that for nonpitched percussion instruments can take many forms.

Notating Nonpitched Percussion Instruments with No Pitch Variation

Single instruments such as the maracas or claves can be notated on a single line, either using a one-line staff or a line or space within a five-line staff.

EXAMPLE 14-1. Single Nonpitched Percussion Instruments

Tamb.

f

or

Field Dr.

f

Let us suppose we have one player playing snare, tenor, and bass drums. We can use either a one line or a five-line staff for each instrument, or show all three instruments on one five-line staff, assigning a different line or space to each instrument.

EXAMPLE 14-2. Several Nonpitched Percussion Instruments

Player 1: S. Dr., Ten. Dr., Bs. Dr.

sf *f*

or

Player 1: S. Dr., Ten. Dr., Bs. Dr.

f *sf*

or

Player 1: S. Dr., Ten. Dr., Bs. Dr.

sf *f*

Any of these three methods would clearly notate the three instruments. Notice that in the first two examples the stems of the tenor drum notes go up or down. The third option is preferred by many percussionists.

If three different players were to perform the three different instrumental parts given in Example 14-2, either of the first two notational methods could be used, but the stems of the snare and tenor drum notes in measure 5 would of course need to be separated.

Notating Nonpitched Percussion Instruments with Pitch Variation

There are several accepted methods of notating multiples of a single instrument in different sizes, as when three wood blocks, five temple blocks, three timbales, or four cymbals are used. Either a one-, two-, or five-line staff can be used; for instruments in four different sizes or greater we recommend the clarity of a five-line staff.

EXAMPLE 14-3. Multiples of a Single Instrument

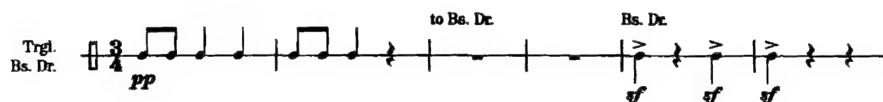
Notating More than One Nonpitched Percussion Instrument on a Single Line

Sometimes a composer might wish to have a player perform on two instruments in very close proximity. Often these parts will be notated on one line, with written cues about which instrument should be played next.

EXAMPLE 14-4. Two Instruments, One Player

This type of notation certainly saves space, and is especially useful when there is only one percussion player or there is very little written for the percussion section in the work. One further refinement would make this notation even clearer: making the bass drum stems go down instead of up to differentiate it from the triangle (see also Example 12-47).

EXAMPLE 14-5. Two Instruments, One Player



One crucially important fact must be kept in mind whenever one player is called on to switch from one instrument to another: enough time must be allowed for the player to change sticks. It is not so bad between triangle and bass drum, for example, for the player can hold a triangle beater in one hand and a bass drumstick in the other. However, if the switch is between a triangle and a snare drum, the performer must put down the triangle beater and ready the two snare drumsticks in order to play on that instrument.

Notating a Switch from Nonpitched to Pitched Percussion Instruments

Another notational issue concerns switching from a nonpitched to a pitched percussion instrument (or vice versa), printed on the same line and played by the same performer. Here are two ways of providing clear notation:

EXAMPLE 14-6. Nonpitched and Pitched Instruments



Again, some time has to be allotted for the player to switch from sticks to mallets (or vice versa), unless the composer wishes both instruments to be played with xylophone mallets, in which case this should be notated in the score. If this were done, less time would be needed between the performances of the two instruments, for the player could position them in such a manner as to play them both at the same time.

Notated Examples of Percussion Parts

The following percussion placements on pages taken from actual orchestral scores using large percussion sections do not always adhere to our guidelines given above. For instance, for the setup for the Turkish-sounding instruments in

Mozart's overture to *Die Entführung aus dem Serail* the publisher chose to put the bass drum first, placing it on a five-line staff, while the triangle and cymbals are assigned to a one-line staff. Notice also that this publisher did not follow the high-to-low sequence:

EXAMPLE 14-7. Mozart, *Die Entführung aus dem Serail*, Overture, mm. 1–9

Presto

Flauto piccolo
2 Oboi
2 Clarinetti in C
2 Fagotti
2 Corni in C
2 Trombe in C
Timpani in C-G
Tamburo grande
Triangolo
Piatti
Violino I
Violino II

Shostakovich follows the prescribed sequence in his percussion setup, placing all the nonpitched instruments below the timpani and above the xylophone, in high-to-low order.

EXAMPLE 14-8. Shostakovich, Symphony No. 6, opening

Timpani
Tamburino
Tamb. milit.
Triangolo
Piatti
Gr. Cassa
Tam-tam
Xilofono
Arpa
Celesta

In the setup of this Orff score the xylophone is placed above the nonpitched percussion—certainly an acceptable arrangement but not as often used as that of the Shostakovich example.

EXAMPLE 14-9. Orff, *Carmina burana*, No. 14, "In taberna quando sumus," mm. 83–96

Since the four pianos are counted as soloists rather than as part of the percussion ensemble in the next example, Stravinsky places them above the timpani. All other percussion instruments are below the timpani, with the xylophones again right below, followed by the nonpitched percussion in a more or less high-to-low sequence.

EXAMPLE 14-10. Stravinsky, *Les Noces*, Second Tableau, mm. 163–173

PERCUSSION SECTION SETUP

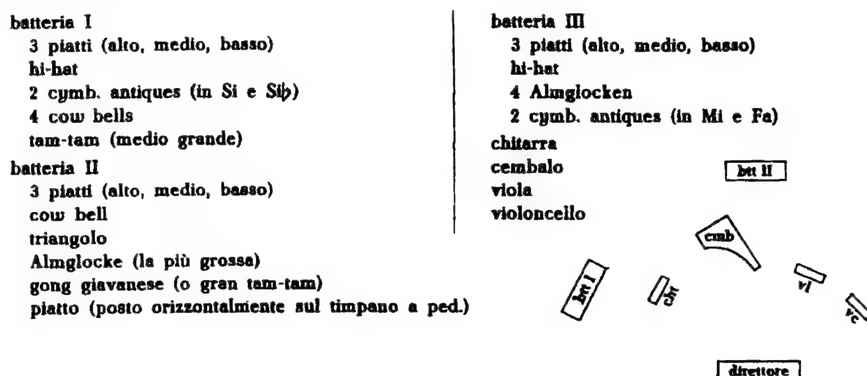
Unless a particular setup is required (as for an antiphonal work) or the composer or orchestrator has had first-hand experience with the problem of choreographing this very complex section, it is best to leave the assignment of players and placement of instruments to the section leader or players themselves. Most professional percussion sections have developed their own favorite, sometimes idiosyncratic setups.

Some modern scores suggest placements of percussion instruments and players. We give three examples of these below. If you feel that you must provide a diagram that shows the appropriate percussion-section placement, be sure that the number of players needed is clearly indicated in the diagram and that each player is able to handle all the instruments required of him or her at

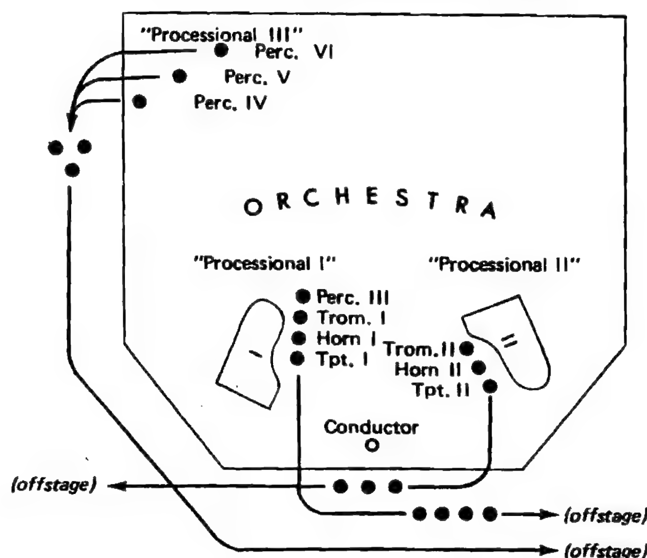
any given moment in the piece. It is better to ask for an extra player in a work with an extremely active percussion section than to demand that too few percussionists cover a multiplicity of instruments.*

Here are three different examples of percussion-section placements. In the first, Wlodzimierz Kotoński uses three different languages in his instructions; in the second and third, all instructions are given in English.

EXAMPLE 14-11. W. Kotoński, *a battere*



EXAMPLE 14-12. Crumb, *Echoes of Time and the River*



*In the few examples of huge percussion sections before our own time, Respighi's *Feste romane* asks for fourteen different percussion instruments, ten of which play simultaneously at one point during the work. Most orchestras cannot afford to hire ten or more players, and unless the normal roster of percussion players—or one that is slightly enlarged—can handle all the instruments, some parts of necessity may be left out.

EXAMPLE 14-13. Berio, *Circles*

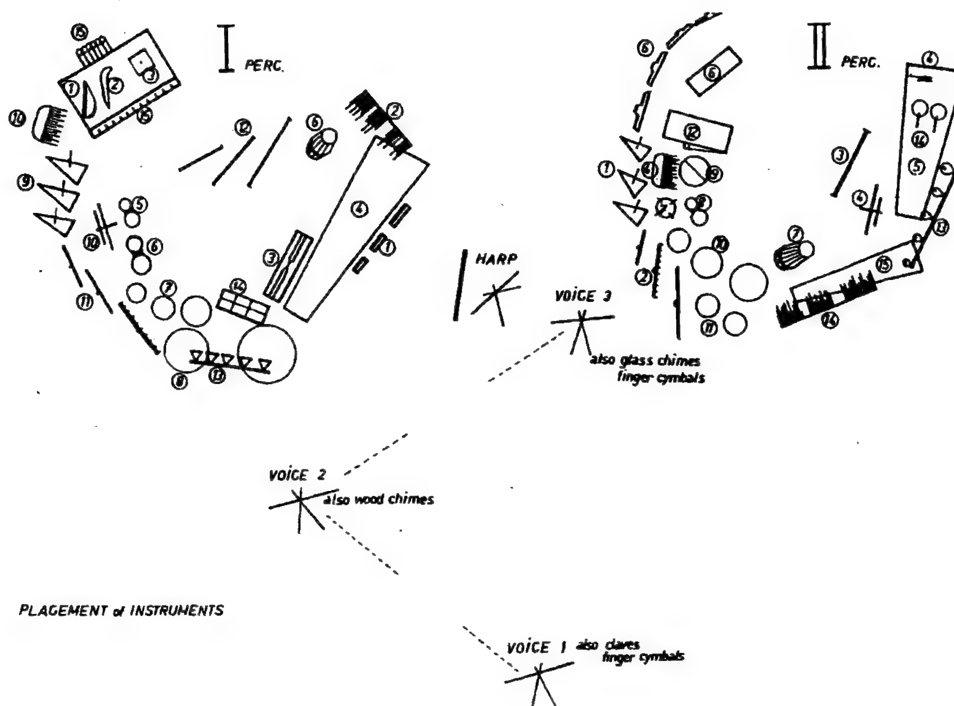
PERC. I *
3 wood blocks ①
mexican bean ② also guiro
log drum ③ also wood chimes
also sand block
marimbaphone ④
2 small bongos ⑤
2 large bongos ⑥ also 1 tablas
3 tom tom ⑦
2 small timpani ⑧
3 triangles ⑨
hi hat ⑩ also glass chimes
3 susp. cymbals ⑪ the lower with „sizzles"
3 tam tam ⑫
5 cencerros ⑬
lu jon ⑭
6 susp. chimes [campane] ⑮ also celesta [sounds 1 oct. higher]

VOICE
spoken
beats the tempo
hand clap
approx. pitch [optional, exact pitch]
on the breath
gives attacks

HARP

PERC. II *
3 triangles ①
3 susp. cymbals ② the medium with „sizzles"
1 tam tam ③
hi hat ④ also glass chimes & clap cymbals
vibraphone ⑤
4 chinese gongs ⑥ also glockenspiel
tamburo basco ⑦ also 1 tablas
2 bongos ⑧ snare drum ⑨
3 tom tom ⑩ 2 congas ⑪
foot pedal bass drum ⑫
5 temple blocks ⑬
maracas ⑭ also wood chimes
xylophone ⑮ [sounds 1 oct. higher]

* sticks:
1. hard
2. soft
3. wood
4. metal
5. brushes
1 2 3 4 5



PLACEMENT of INSTRUMENTS

USES OF THE PERCUSSION SECTION

We will discuss five leading ways in which the percussion section has been used in Western orchestral scores over the last few hundred years:

1. to simulate march music (for example, *à la Turque*) or to give an ethnic flavor (this does not apply to the early use of timpani);
2. to emphasize accents and general rhythmic activity;
3. to build or to cap a climax;
4. to create a dramatic beginning to a work (such as the cymbal struck at the very beginning of the Prelude to Bizet's *Carmen*);
5. to color certain pitches or entire passages by doubling other instruments in the orchestra.

In addition, given the expansion of the percussion section and the extraordinary technical skill of today's professional percussion players, composers have been using percussion, especially pitched percussion, as an independent section, often alternating it with another choir of the orchestra. This most colorful section of the modern orchestra has many other uses, but these are the most important.

Let us look at some examples from the orchestral literature. In our discussion we shall include the harp and keyboard instruments, since these are most often placed together with the percussion group. Since we are concerned with orchestral literature and not chamber or percussion repertoire, we shall omit works such as Varèse's *Ionisation*, which is for percussion alone.

Simulating March and Ethnic Music

An example from Beethoven's Symphony No. 9 typifies the marchlike percussion group (usually called the "Turkish instruments") so popular with Classical as well as early Romantic composers for conjuring up the specter of marching soldiers, wars, or any other kind of strife. Notice that the timpani are not used, for they were not considered part of this particular percussion group; by Beethoven's time the timpani had become a regular part of the orchestra.

The variation begins with the bass drum reinforcing the bassoons and the contrabassoon, and four measures later also the clarinets and horns. The bass drum is joined by the triangle and cymbals when the tune enters in the winds and horns in measure 13. This section is traditionally played with a gradual crescendo, as if a band were coming toward us from afar.

CD-5/TR. 9

EXAMPLE 14-14. Beethoven, Symphony No. 9, fourth movement, Alla marcia, mm. 1–33

11

2 Fl. Picc.
Ob.
B♭ Cl.
Bsn.
Cbsn.
B♭ Hn.
B♭ Tpt.
Trgl.
Cymb.
Bs. Dr.

pp
pp sempre

18

2 Fl. Picc.
Ob.
B♭ Cl.
Bsn.
Cbsn.
B♭ Hn.
B♭ Tpt.
Trgl.
Cymb.
Bs. Dr.

24

2 Fl. Picc.

Ob.

B♭ Cl.

Bsn.

Cbsn.

B♭ Hn.

B♭ Tpt.

Trgl.

Cymb.

Bs. Dr.

Vln.

pp

pp

Vla.

pp

Vlc. D.B.

pp

30

2 Fl. Picc. *sempre pp*

Ob. *sempre pp*

B♭ Cl. *sempre pp*

Bsn. *sempre pp*

Cbsn. *sempre pp*

B♭ Hn. *sempre pp*

B♭ Tpt.

Trgl. *sempre pp*

Cymb. *sempre pp*

Bs. Dr. *sempre pp*

In the next example, from *Capriccio espagnol*, Rimsky-Korsakov combines tambourines and castanets with other percussion instruments (triangle, snare drum, and cymbals) to suggest the dance music of Spain.

EXAMPLE 14-15. Rimsky-Korsakov, *Capriccio espagnol*, fourth movement, mm. 78–98

CD-5/TR. 10

82 P

Picc.
2 Fl.
2 Ob.
B♭ Cl.
A Cl.
2 Bsn.
4 F Hn.
2 A Tpt.
Timp.
Trgl.
S. Dr.
Cymb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2 arco pizz. div.

86

Picc.
2 Fl.
2 Ob.
B♭ Cl.
A Cl.
2 Bsn.
4 F Hn.
Timp.
Trgl.
S. Dr.
Cymb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

arco
pizz.

90
Q
Picc.
2 Fl.
2 Ob.
B♭ Cl.
A Cl.
2 Bsn.
4 F Hn.
2 A Tpt.
4 Trb.
Timp.
Trgl.
Tamb.
S. Dr.
Cymb.
Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
a 2
arco
pizz.
ff
f
mf

Using these instruments in this manner had become a cliché with composers of the eighteenth and nineteenth centuries, although many successsful compositions, including Chabrier's *España*, were part of this tradition. The same instruments have been used to suggest any region around the Mediterranean, often appearing in "Italian" and even "Moroccan" pieces, such as Tchaikovsky's *Capriccio Italien* and Ibert's *Escales*.

Emphasizing Rhythmic Accentuation

The second common usage of percussion instruments is to emphasize general rhythmic activity or for sharp accents. Several places in Copland's *Appalachian Spring* aptly illustrate the imaginative use of different percussion instruments for this purpose.

1. The xylophone reinforces every high accent of the violin parts, while the tabor (a field drum) lends support to the stopped horn's low accent in measures 53–54.

CD-5/TR. 11

EXAMPLE 14-16. Copland, *Appalachian Spring*, mm. 51–54

51 Allegro (♩ = 160)
A Cl. 1
2 Bsn.
2 F Hn.
(cuivré) *sf*
(cuivré) *sf*
p
Xyl.
f
Tabor (Field Dr.)
sf
Pno.
f vigoroso
8va
Hp.
Tutti
Vln. 1
f vigoroso
Tutti
Vln. 2
f vigoroso
Tutti
Vla.
f vigoroso
Vlc.
D.B.

2. The piano emphasizes the *sfp* of the strings in measure 58.

EXAMPLE 14-17. Copland, *Appalachian Spring*, mm. 55–61

CD-5/TR. 12

3. The wood block supports the off-beat accent in the violins.

CD-5/TR. 13

EXAMPLE 14-18. Copland, *Appalachian Spring*, mm. 225–228

225 Fast ♩ = 132

Fl. 1 — mp
Picc. — mp
2 Ob. — a 2
B♭ Cl. 1 — mp
B♭ Cl. 2
2 Bsn. — a 2 Soli — f
2 B♭ Tpt. — 2. — mf
2 Trb. — 1. *non legato* — f
Trgl. / Wood Bl. — Wood Bl. — Trgl. — p
Vln. 1 — mf — pizz. — mp
Vln. 2 — p — mf — mp
Vla. — f
Vlc. — pizz. — f

4. The triangle adds to the excitement of the buildup of the run that leads to a sharp accent in measure 235; then the snare drum, first with a brush and then with a stick on the rim, emphasizes the off-beat, creating the effect of a lighter downbeat.

EXAMPLE 14-19. Copland, *Appalachian Spring*, mm. 229–244

CD-5/TR. 14

Allegro

229

Fl. 1

Picc.

2 Ob.

a 2

B♭ Cl. 1

B♭ Cl. 2

2 Bsn.

a 2

f

1. *non legato*

2 F Hn.

2. con sord.

2 Trb.

1.

Trgl.

Vln. 1

Vln. 2

Vla.

Vlc.

arco

233
Fl. 1
Picc.
2 Ob.
B♭ Cl. 1
B♭ Cl. 2
Change to A Cl.
2 Bsn.
a 2
2. secco
(cuivré)
2 F Hn.
2 B♭ Tpt.
1. Solo
S. Dr.
Trgl.
Brush on S. Dr.
Vln. 1
Vln. 2
div. secco
Vla.
p secco

237
2 Ob.
1. Solo
A Cl.
2 Bsn.
1. secco
2 B♭ Tpt.
S. Dr.
Vln. 2
Vla.

5. The claves, giving off a very dry, woody color, strengthen the high accents at this rhythmically exciting spot.

CD-5/TR. 15

EXAMPLE 14-20. Copland, *Appalachian Spring*, mm. 375–382

When this music returns at the end of this section (not shown here), Copland adds xylophone and strings, finally crowning the climax with a series of solo timpani strokes aided by bass pizzicati.

Creating a Climax

Many composers have used the percussion section to build a climax or help sustain one. The percussion sometimes aids in this buildup using an ostinato or other kinds of repeated gestures. Alternatively, the percussion may be held back until the climactic moment. Of the three examples of successful climaxes given here, the first two show how to use the percussion to build a climax and the last to add to the climax at the last minute. There are many instances of such climaxes, among them Wagner's Overture to *Rienzi*, measures 47–65; William Schuman's *New England Triptych*, first movement, measures 235–269; and Joseph Schwantner's . . . *and the mountains rising nowhere*, measures 91–120.

Building or Sustaining a Climax

Debussy, Nocturnes, "Fêtes." At [10], an extremely soft, steady eighth-note beat begins in the timpani, supported by harps and pizzicato strings. This beat continues under the theme until [11], when the timpani change to single strokes on the beginning of each beat only. A steady crescendo underlies the melodic fragments heard in the winds and horns from [12] to [13], at the end of which the timpani ostinato turns into the main rhythmic figure , which keeps driving toward the climax at [14]. The timpani are aided in this buildup by two other members of the percussion section: the snare drum, which enters at two measures before [13], and the cymbals, at [13].

EXAMPLE 14-21. Debussy, *Nocturnes*, "Fêtes," from [10] to [14]

CD-5/TR. 16

[10] Modéré mais toujours très rhythmé

Hp. 1

Hp. 2

Timp.

Vlc.

Vlc.

D.B.

F Tpt.
(sourdines)
pp
pp
3
Hp. 1
Hp. 2
Timp.
Vlc.
Div.
Vlc.
D.B.

un peu rappoché
F Tpt.
3
Hp. 1
Hp. 2
Timp.
Vlc.
Vlc.
D.B.

11

Fl. 1, 2 — *p* peu a peu

Picc. — *p* peu a peu

2 Ob. — *p* peu a peu

Eng. Hn. — *p* peu a peu

2 B♭ Cl. — *p* peu a peu

3 Bsn. — *p* peu a peu

F Tpt.

Hp. 1

Hp. 2

Timp.

Vln. 1 — pizz. peu a peu

Vln. 2 — Div. pizz. peu a peu

Vla. — Div. pizz. peu a peu

Vlc. — pizz. peu a peu

Vlc. — peu a peu

D.B. — Unis. peu a peu

12

Fl. 1, 2
Picc.
2 Ob.
Eng. Hn.
2 B♭ Cl.
3 Bsn.
F Hn.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
Vlc.
D.B.

cresc.
Div.
Unis.
f

Fl. 1. 2
Picc.
2 Ob.
Eng. Hn.
2 B♭ Cl.
3 Bsn.
F Hn.
cresc.
Timp.
S. Dr.
molto cresc.
Vln. 1
molto cresc.
Unis.
Vln. 2
molto cresc.
Vla.
molto cresc.
Vlc.
molto cresc.
Vlc.
D.B.
molto cresc.

13
Fl. 1, 2
2 Ob.
a 2
2 B♭ Cl.
Bsn. 1, 2
1.
F Hn.
3.
F Tpt.
vibrant sans dureté
vibrant sans dureté
Trb. 1, 2
vibrant sans dureté
Trb. 3
Tba.
Hp. 2
Timp.
Cymb.
S. Dr.
arco
Vln. 1
arco
Vln. 2
arco
Vla.
arco
Div.
Vlc.
D.B.

Fl. 1, 2
2 Ob.
2 B♭ Cl.
Bsn. 1, 2
F Hn.
F Tpt.
Trb. 1, 2
Trb. 3 Tba.
Hp. 2
Timp.
Cymb.
S. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Fl. 1, 2
2 Ob.
Eng. Hn.
a 2
2 B♭ Cl.
Bsn. 1, 2
F Hn.
F Tpt.
Trb. 1, 2
Trb. 3
Tba.
Hp. 2
Timp.
Cymb.
S. Dr.
Vln. 1
Vln. 2
Vla.
Unis.
Vlc.
D.B.

14

Fl. 1, 2
2 Ob.
Eng. Hn.
2 B♭ Cl.
3 Bsn.
F Hn.
F Tpt.
Trb. 1, 2
Trb. 3
Tba.
Timp.
Cymb.
S. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2

ff très soutenu

Div.

pp

The climax is broken off suddenly at the change to $\frac{6}{8}$ at the end of the excerpt, when material heard at the beginning of the piece returns (not shown here).

Warren Benson, *Symphony for Drums and Wind Orchestra*. This is an unusually fine example of a sustained climax kept alive by the percussion section only. The orchestra dies out at the climax at [N], but the repeated rhythmic motives in the percussion parts, previously heard separately in this movement and now heard in combination, create an effective extension of the climax. The device of letting a movement die out with percussion is certainly a contemporary one, and this particularly lengthy decay is most powerful.

EXAMPLE 14-22. W. Benson, *Symphony for Drums and Wind Orchestra*, third movement, 3 mm. before [M] to end

CD-5/TR. 17

Allegro (♩ = 180)

M

Picc.
Fl.
Ob.
Eng. Hn.
E♭ Cl.
B♭ Cl.
Bs. Cl.
Bsn.
Cbsn.
Hn.
Tpt.
Trb.
D.B. Tuba
Hp. 1
Hp. 2
Pno.
Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4
Perc. 5

a 2
1., 3.
2.
4.
5., 6.
unis.
1., 2., 3.
gliss.
Fl. Cl.
Xylophone
l.v.

N

Solo drums to end

Picc.
Fl.
Ob.
Eng. Hn.
E♭ Cl.
B♭ Cl.
1, 2, 3.
4, 5, 6.
Bs. Cl.
Bsn.
Cbsn.
Hn.
Tpt.
Trb.
D.B. Tuba
Hp. 1
l.v.
gliss.
Hp. 2
l.v.
gliss.
Pno.
gliss.
gliss.
Timp.
Perc. 1
Perc. 2
sub. mp
Perc. 3
Perc. 4
Cymb.
l.v.
Perc. 5

Timp.
Perc. 1
Perc. 3

ff ff ff

Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4

mf mf
Field dr.
ff

Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4
Perc. 5

mf mf mf mf mf mf mf
2 wood stix
R L L R L L R
ff mp mf f ff mp mf f ff mp mf f

Dying away gradually to end—
maintain tempo and accent

Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4
Perc. 5

ff ff mf mf ff ff
ff mp mf f

Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4
Perc. 5

silence

Timp.
Perc. 1
Perc. 2
Perc. 3
Perc. 4
Perc. 5

Holding Back Until the Climactic Moment

One of the most carefully and masterfully planned climaxes occurs at the end of Brahms's Symphony No. 2. Brahms's restraint in using the timpani is rewarded by one of the most thrilling and powerful endings in the symphonic literature. Of course, the excellent brass (trombone, tuba) writing helps, but the delayed entrance of the timpani is what makes this climax work.

EXAMPLE 14-23. Brahms, Symphony No. 2, fourth movement, m. 392–end

CD-5/TR. 18

Allegro molto

2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
2 E Hn.
2 D Tpt.
Trb. 1, 2
Trb. 3 Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc. D.B.

408
2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
2 E Hn.
2 D Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

416
2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
2 E Hn.
2 D Tpt.
Trb. 1, 2
Trb. 3
Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

2 Fl.
2 Ob.
2 A Cl.
2 Bsn.
2 D Hn.
2 E Hn.
2 D Tpt.
Trb. 1, 2
Trb. 3
Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Creating a Dramatic Beginning

We mentioned that a dramatic moment may come at the very beginning of a piece or movement. In this regard, a percussion sound can be a great "ear-opener." Here are several effective beginnings using various percussion instruments.

Rossini was a great showman and opened his famous overture to *La Gazza ladra* with an echo effect performed on the snare drum. The tradition of having two performers play this opening in antiphony is said to date back to the earliest performances of the work and is usually followed in performances today, even though this setup is not indicated in many editions of the score. One snare drum is placed to the left of the orchestra and plays the first measure at a forte dynamic; another is placed to the right and echoes the gesture at a piano dynamic. Then the two combine in measure 3 to effect a crescendo to forte.

CD-5/TR. 19

EXAMPLE 14-24. Rossini, *La Gazza ladra*, Overture, mm. 1–12

Maestoso marziale.

Picc.
Fl.
Ob.
A Cl.
Bsn.
2 E Hn.
2 G Hn.
A Tpt.
Trb. 1, 2
Trb. 3 Tba.
Timp.
Trgl.
S. Dr.
Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

7

Picc.
Fl.
Ob.
A Cl.
Bsn.
2 E Hn.
2 G Hn.
A Tpt.
Trb. 1, 2
Trb. 3 Tuba
Timp.
Trgl.
S. Dr.
Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

The percussion does not have to be loud to be dramatically effective. At the beginning of his violin concerto Beethoven writes a very novel musical gesture. The timpani introduce the entire work, emerging out of silence with a four-note motive that is played very quietly, creating a rather mysterious atmosphere. Few if any major works before this time used the same effect, and most critics contemporary with Beethoven commented on its fresh sound.

CD-5/TR. 20

EXAMPLE 14-25. Beethoven, Violin Concerto, first movement, mm. 1–10

Allegro, ma non troppo
TUTTI

Fl.
Ob.
A Cl.
Bsn.
D Hn.
D Tpt.
Timp.
Vln. solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p dolce
cresc.
sf
p

A cymbal crash is a surefire way to change a mood suddenly or to wake up an audience after a slow or soft movement. The longer cymbal crash at the beginning of the finale to Tchaikovsky's Symphony No. 4 certainly succeeds in performing this task. With a short stroke the crash cymbals then cut off the first long run in measure 4, and with another longer crash restart the repetition of that run in measure 5. Here tradition again enters the picture: in both measures 1 and 5 an eighth note is notated but the performer usually lets the cymbals vibrate; measure 4 is notated the same way, but there the cymbals are choked immediately so as not to intrude on the silence of beats 3 and 4 of that measure. To ensure a difference between the two modes of performance, a composer or orchestrator could put a slur or the designation *l.v.* in measures 1 and 5 and place a dot over the eighth note in measure 4. This would make the composer's intention instantly clear to the player.

EXAMPLE 14-26. Tchaikovsky, Symphony No. 4, fourth movement, mm. 1–8

CD-5/TR. 21

Allegro con fuoco.

1

Picc.

Fl. 1

Fl. 2

Ob.

B♭ Cl.

Bsn.

1, 2
F Hn.
3, 4

F Tpt.

2 Ten. Trb.

Bs. Trb.
Tba.

Timp.

Cymb.
Bs. Dr.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

ff

5

Picc.
Fl. 1
Fl. 2
Ob.
B♭ Cl.
Bsn.
1, 2
F Hn.
3, 4
F Tpt.
2 Ten. Trb.
Bs. Trb.
Tba.
Timp.
Cymb.
Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Shostakovich writes a blockbuster beginning to the Finale of his Symphony No. 5. Emerging out of a tremendous crescendo in measure 1, the timpani overwhelm the entire orchestra and lay down an eighth-note ostinato under the exposition of the main theme. For all who have experienced this work, the power of this particular opening is unforgettable.

EXAMPLE 14-27. Shostakovich, Symphony No. 5, fourth movement, at [97]

CD-5/TR. 22

Allegro non troppo ♩ = 88

Picc.
Fl. 1, 2
Ob. 1, 2
E♭ Cl.
B♭ Cl. 1, 2
Bsn. 1, 2
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
B♭ Tpt. 1, 2
B♭ Tpt. 3
Trb. 1, 2
Trb. 3, Tba.
Timp.

Coloring Pitches or Passages

Percussion is often used to color specific pitches or rhythms played by other orchestral members. In the following example by Stravinsky, an entire section of a work, colored by timpani, bass drum, and tam-tam, gives the effect of a ponderous procession (cortège).

CD-5/TR. 23

EXAMPLE 14-28. Stravinsky, *Le Sacre du printemps*, Part I, "Cortège du sage," mm. 1–14

1 Pesante

Bsn. 1, 2

Bsn. 3

Cbsn. 1, 2
2.
p stacc.
1.

1, 3
2, 4
Hn.
5
6
1., 2., a 2
3., 4., a 2
mf

B♭ Tba. 1, 2
a 2

Bs. Tba. 1, 2
a 2

Timp.
bacch. dura, sempre stacc.
mf

Bs. Dr.
sempre marc.

Vlc. div.
3 Soli *stacc.*
mf

D.B. div.
3 Soli
mf

5

Ob. 1, 2
sempre poco sf

Bsn. 1, 2
mf

Bsn. 3
mf

Cbsn. 1, 2
mf

1, 3
2, 4
Hn.
5
6

B♭ Tba. 1, 2
Tba.
Bs. Tba. 1, 2

Timp.

Bs. Dr.

Tam-Tam
mf sempre marc.

Vla. div.
div.
mf

Vlc. div.
Tutti div.

D.B. div.
Tutti div.

9

Ob. 1, 2
Bsn. 1, 2
Bsn. 3
Cbsn. 1, 2
1, 3
2, 4
Hn.
5
6
B♭ Tba. 1, 2
Bs. Tba. 1, 2
Timp.
Bs. Dr.
Tam-Tam
Vla. div.
Vlc. div.
D.B. div.

f 2. 1. a 2 a 2 6/4

13

Fl. 1, 2

Fl. 3

Alt. Fl.

Ob. 1, 2 — 1., 2., a 2 / 3., 4., a 2 — ff (non legato)

Eng. Hn. — ff

D Cl. — fff

B♭ Cl. 1, 2 — stacc. ff

B♭ Bs. Cl. 1, 2 — stacc. ff

Bsn. 1, 2 — ff

Bsn. 3 — ff

Cbsn. 1, 2 — ff

Hn. 1, 3 / 2, 4 / 5 / 6

D Picc. Tpt. — ff

C Tpt. 1, 2 — ff

C Tpt. 3 — fff

C Tpt. 4 — (non legato) sempre sf

Trb. 1 — fff

Trb. 2, 3 — fff

B♭ Tba. 1, 2 — ff maestoso

Bs. Tba. 1, 2

Timp.

Bs. Dr.

Tam-Tam

Guiro — etc. sim.

Vln. 1 — fff sul pont. sino al segno

Vln. 2 — ff unis.

Vla. div. — ff unis.

Vlc. div. — ff unis.

D.B. div. — ff

The ethereal quality at the end of the following piece is greatly enhanced by the introduction of the antique cymbals (or crotales), which double the third horns on the pedal note E that underlies Debussy's typically French and slightly dissonant cadential figure. The antique cymbals actually become the most prominent instrumental color at the end of the piece.

CD-5/TR. 24

EXAMPLE 14-29. Debussy, *Prélude à "L'après-midi d'un faune,"* mm. 106–110

106 Très lent et très retenu jusqu'à la fin

Leslie Bassett uses two keyboard instruments and harp to color each chord change in the upper strings.

EXAMPLE 14-30. L. Bassett, *Variations for Orchestra*, 1 mm. before [PP] to 4 mm. after [PP]

CD-5/TR. 25

♩ = 62 · PP · Cel. · Hp. · Pno. · Vln. 1 · Vln. 2 · Vla. · Vlc. · D.B. · mp · pp · p · mf · div. · div. in 2 · pizz. · unis. · preciso · F♮

The following little dance variation is a marvelous example of a composer deploying the percussion section as an integral part of the musical material. The entire percussion section, used with great ingenuity and taste, colors the whole atmosphere of the piece and even takes over the thematic material. In Example 14-31 the timpani emphasize the string pizzicato portion of the opening theme, and this economical use of the wood block becomes an integral part of the theme, heard right along with the string pizzicato each time the theme returns. At measure 821 (Example 14-32) the wood block's formerly spare part is expanded to a solo, creating a most satisfying conclusion to this section.

CD-5/TR. 26

EXAMPLE 14-31. Bernstein, *Fancy Free*, "Danzon," mm. 737–743

EXAMPLE 14-32. Bernstein, *Fancy Free*, "Danzon," mm. 820–830

CD-5/TR. 27

♩= 120

820

Fl. 1

Fl. 2

Ob.

B♭ Cl.

Bsn.

W. Bl.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

pizz.

p

pp

825

Fl. 1
Fl. 2
Ob.
B♭ Cl.
Bsn.
F Hn.
B♭ Tpt.
Tbn.
Tba.
Timp.
W. Bl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

pp p ppp f fz ff arco

PART TWO
ORCHESTRATION

15

SCORING FOR ORCHESTRA

Scoring for orchestra is thinking for orchestra. When dealing with a composite instrument like the orchestra you must be completely familiar with the character and quality of the orchestra's components: the range and limitations of each instrument as well as how that instrument will sound alone and in combination with other instruments. The timbre, strength, and texture of every segment of the instrument's range become crucial when you are creating orchestral color combinations.

The art critic Jacques Maroges has said, "The greatest colorists have always obtained the maximum brilliance and vibration with a minimum of color."* This is an important axiom to remember as we analyze the use of the entire orchestra in this chapter. Inexperienced orchestrators sometimes use such a great variety of different effects, creating a constant flux of color and texture, that the structure of the work is often put in jeopardy. We will see that carefully balancing orchestral colors and defining the musical elements by means of the orchestration instead will help to clarify musical organization and yield the very best orchestral sound. The great orchestrators of the past and present also realized that a listener can tire very easily of the monotony created by hearing all orchestral choirs play together for too long a time in a seemingly never-ending orchestral tutti. But inexperienced orchestrators often fall into this very trap.

One of the major functions of the orchestration of an extended work is to help clarify the form of the entire piece.† In this chapter we will examine how some of the great orchestrators have scored the most effective tutti; scored foreground, middleground, and background material; handled a purely polyphonic section; and dealt with newer techniques, such as pointillistic or *Klangfarben* scoring and pitch colorings. We will isolate each passage's major structural elements and examine the passage's orchestral setting. Studying these excerpts in the context of examining the works' larger formal structures, including their major themes or main gestures (melodic, rhythmic, and harmonic), can reveal how the various orchestrational techniques employed by these composers indeed help to strengthen the works' formal structures.

---

*Quoted by Joyce Cary in *Art and Reality: Ways of the Creative Process* (New York: Harper Brothers, 1958), 107.

†No matter how imaginative and colorful the orchestration, however, it cannot save a badly composed piece of music: "Only that which is well written can be well orchestrated." (Nikolay Rimsky-Korsakov, in his preface to *Principles of Orchestration*, trans. by Edward Agate [New York: Kalmus, n.d.], vii.)

THE UNISON-OCTAVE TUTTI

We will begin by examining the textural technique of using tutti. The Italian word *tutti* refers to the simultaneous use of most or all orchestral instruments. We usually find two kinds of tutti sections: (1) the *partial tutti*, using only some of the instruments at hand; and (2) the *full tutti*, using every (or almost every) orchestral instrument simultaneously.

The following excerpts show effective orchestral tutti using unisons or octaves. We will analyze each one separately to isolate the various devices used to create this powerful effect.

The Unison Tutti

Very few unison tutti exist because of the limitations of instrumental ranges. In the partial unison tutti shown in Example 15-1, we see that the composer has omitted the flutes and oboes, since their ranges do not extend downward far enough to play the entire passage. A composer today, however, might have used the oboes to emphasize the *sf* in measure 211 as well as perhaps a muted trumpet to give this accent a special flavor. But although a modern composer might have also assigned the trumpets to play the entire excerpt they would not be in their best register. Notice that the trombones in the original score are marked ***ppp*** so as not to dominate the entire orchestra. The violins' pitches, which here are all assigned to the G string ("4e corde"), strengthen the power of this unison passage. The composer may have left out the double basses, even though they could have played this unison tutti at pitch, because they would have had difficulty keeping the high notes in tune; in addition, their weak sound in this high register would contribute little to the resulting orchestral sound.

The variously articulated lines in the strings and trombones, as well as the tremolo in the violas (curiously the only instrument to have one), add tension to the smooth, slurred line of the winds and horns. This imaginative undercurrent of activity adds subtle flavor to an otherwise single-minded melodic statement.

The Octave Tutti

Example 15-2 (page 550) shows a full tutti in octaves starting at measure 130, at the climax or end of the first section of the symphony. Barber orchestrates the crescendo by adding brass instruments and timpani to double the pitch D that is played by the rest of the orchestra. This unison crescendo climaxes in measures 131–132, when the germinal idea of the section returns in a multi-octave spread. The solo timpani reiterates the idea in measure 133, which is followed by a unison/octave orchestral glissando. Here Barber very subtly enlarges the doubling in order to exploit varied instrumental timbres.

EXAMPLE 15-1. D'Indy, *Istar*, mm. 206–216 (strings only recorded)

CD-5/TR. 28

EXAMPLE 15-2. Barber, Symphony No. 1, mm. 128–136

CD-5/TR. 29

♩= 116

128

Fl. 1
Fl. 2
Picc.
Ob. 1, 2
Eng. Hn.
A Cl. 1
A Cl. 2
Bs. Cl.
Bsn. 1, 2
Cbsn.
1, 2 Hn. 3, 4
Tpt. 1, 2, 3
1, 2 Trb. 3
Tba.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

f marcatissimo

ff

p

131

Fl. 1, 2
Picc.
Ob. 1, 2
Eng. Hn.
A Cl. 1
A Cl. 2
Bs. Cl.
Bsn. 1, 2
Cbsn.
Hn. 1, 2
Hn. 3, 4
Tpt. 1
Tpt. 2
Tpt. 3
Trb. 1, 2
Trb. 3
Tba.
Timp.
Cymb.
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2 · ff · mf · f · Solo · gliss. · 3 · 7 · 9 · 16

Notice these details:

1. If we listen to the whole movement we hear that the octave skip is a major gesture in this first part of the symphony. Barber could have exploited this characteristic in the measures given above and written an octave skip in the horns, lower trombones, and tuba to help make the crescendo in measure 130, but he didn't. Perhaps he felt it would make the gesture too forceful. But by measure 135 the horns are playing in their high register, so we can assume he reserved the full force of their sound for the descending glissando.
2. He wisely cuts out the piccolo and flutes on the descending glissando, substituting the violins, so they won't be forced to drop out on the unison B$\flat^3$, the highest note in measure 136.
3. The trombones and tuba are also omitted in measure 135, for they would make the glissando too heavy. In addition, they cannot play the high D, a note so poignantly articulated by the high horns.
4. The entrance of the third trombone, tuba, and timpani on the low B♭ (measure 136) reinforces the finality of the phrase.

The Multi-Octave Tutti

The orchestral unison spread over several octaves has always been popular and frequently has been called on to introduce a new idea, summarize an old one, or, as in the following example, to state a major melodic gesture before it is developed contrapuntally. Here, Mozart uses a partial multi-octave tutti, leaving out the natural horns since they could not play many of the melody notes.

CD-5/TR. 30

EXAMPLE 15-3. Mozart, Symphony No. 40, fourth movement, mm. 125–132

Allegro assai

125

Fl.

2 Ob.

2 Cl.

2 Bsn.

Vln. 1

Vln. 2

Vla.

Vlc. D.B.

129

Fl.
2 Ob.
2 Cl.
2 Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

What is interesting about the spacing of this octave tutti is its variety. At first, Violins 1 and 2 play in unison with the flute and two oboes, while the octave immediately below is scored rather sparsely for the violas and clarinets only; the octave below that is scored more heavily for the cellos and both bassoons, which is supported yet an octave lower by the double basses. Then, from measure 128 on Mozart divides the orchestra differently, scoring the middle register more heavily, particularly in measures 128–129.

By his orchestration it is clear that Mozart wants the listener to hear the theme as:

EXAMPLE 15-4. The Way Mozart Intended His Theme To Be Heard

3

Thus, in measures 130–132 the flute, oboe, and clarinet, which double the violins an octave higher, add extra sheen and brilliance to the upper strings' main melody line. From this subtle change in doubling we can learn a great deal about how the orchestration clarifies a composer's intentions. If, for instance, Mozart had put these three wind instruments in the same register as the violins, he would have had to drop out the flute and oboe on the final note of the passage (in addition, the oboes would have added too much of a raucous quality to the C♯^{4}). These instruments fill out the space much better in the register where they are written, and the flute is not left alone in its upper register. Through his careful distribution of the pitches among the instruments, Mozart accomplishes his intention of having the gesture heard as written above.

In Example 15-5 we see a full orchestral tutti constrained by limitations of the instruments and playing conventions current when the piece was com-

CD-5/TR. 31

EXAMPLE 15-5. Beethoven, Symphony No. 9, first movement, mm. 16–21

posed; in particular notice the trumpet, horn, flute, and violin parts. If this powerful passage were written today it probably would have been scored differently (but not necessarily better!). For instance, a piccolo might have been assigned to play the anacrusis on the pitch D7 to emphasize the all-important falling 4th; the first flute probably would have been asked also to play the top D, possible on today's instruments; the first violins perhaps would have been placed an octave higher (a register that was rarely, if ever, used in Beethoven's time); and the trumpets and all four horns would have been asked to perform the entire passage in octaves with the rest of the orchestra. In addition, five timpani could be assigned today, so that almost every melody note in the passage could be played by this instrument.

Even though Beethoven did not have most of these options at hand, he wrote a remarkable climax. He used the limitations of Horns 3 and 4, trumpets, and timpani to great advantage, not only to emphasize the power of the final D in measure 21 but also to recall the open 5th and 4th heard at the beginning of the movement. Notice which notes are doubled and which are not. Notice also that the flutes do not double the violins, oboes, and clarinets at pitch but are placed an octave above them. This orchestral thinking is quite forward-looking, for the flute part is so high that it pierces through the rest of the orchestral texture.

Examine every instrumental line separately to ascertain exactly why, from your knowledge of the ranges of instruments used in Beethoven's time, certain instruments deviate, in terms of octave placement, from the melody as played by the strings. Studying Beethoven's orchestration in these measures can teach us some valuable lessons about the strengths and weaknesses of certain instrumental registers, such as that of the flutes from measure 18 on, which need to double each other to give added weight to their line; the voicing of the oboes and clarinets (in order to strengthen the register played by the first clarinet and oboes at the very end of measure 18, the second clarinet jumps up a 10th, even though it could have continued to play in its lower octave); and the limited notes available to the B♭ horn in this key.

The final example, by Smetana, begins with a forceful melodic tutti that in measure 8 turns into a lively melodic figure punctuated by repeated chords in the brass. The sustained brass harmony throughout this passage provides cohesion to the tutti passage. The woodwinds and strings would sound sprightly and exuberant on their own from measure 8 on, but the bright, full brass sound enhances those qualities, rendering the atmosphere even more like a celebration.

How would a composer of today orchestrate this passage? Perhaps the trumpets and horns would play the melody in unison and octaves with the woodwinds and strings, but this would make the eighth-note melody sound much too sluggish, taking the lightness out of the passage. He or she could simply remove the chordal punctuations starting in measure 8 or leave out the brass altogether, which would made the passage sound more brittle. Or he or she could add a xylophone to give added "ping" to the woodwinds' eighth notes, but that would not be stylistically true to Smetana's mid-nineteenth-century orchestra. Smetana's solution gives the very agile instruments an opportunity to show off in their best registers. The harmonic implications of the melody instruments' eighth-note figure are realized by the sustaining brass chords, creating a thrilling opening to the work.

CD-5/TR. 32

EXAMPLE 15-6. Smetana, *The Bartered Bride*, Overture, mm. 1–12

Vivacissimo

Picc. 2 Fl. 2 Ob. 2 C Cl. 2 Bsn. 1, 2 in F Hn. 3, 4 in C 2 F Tpt. Ten. Trb. Bs. Trb. Timp. Vln. 1 Vln. 2 Vla. Vlc. D.B.

a 2

ff

f

sf non legato

7
Picc.
2 Fl.
2 Ob.
2 C Cl.
2 Bsn.
1, 2 in F
Hn.
3, 4 in C
2 F Tpt.
Ten. Trb.
Bs. Trb.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

THE DISTRIBUTION OF FOREGROUND—MIDDLEGROUND—BACKGROUND ELEMENTS WITHIN THE ORCHESTRA

In previous chapters we discussed orchestrating foreground, middleground, and background elements within each individual section of the orchestra, as well as within some combinations of these sections. In this chapter we will show how the orchestration of full orchestral forces effectively clarifies foreground, middleground, and background. We will use these terms to describe textures that clearly demonstrate the more traditional concept of melody with accompaniment, strictly homophonic chordal textures, and those more polyphonic textures made up of two or more distinct musical ideas, one of which is often more melodically prominent than the others.

Within a Homophonic Texture

In this section we will study the following types of homophonic settings for orchestra in terms of foreground—background:

1. melody with accompaniment;
2. the voicing of individual chords (spacing and doubling within these chords);
3. the doubling and voice leading within a chordal texture.

Melody with Accompaniment

A most obvious and effective example of melody with accompaniment is shown in Tchaikovsky's orchestral poem *Francesca da Rimini* (Example 15-7). The melody, introduced in the clarinet alone, flows right into a tune with a homophonic string accompaniment. Often, as is the case here, the color of the accompaniment contrasts (sometimes in a striking way) with that of the solo melody instrument. In many instances, however, successful accompaniments are played by the same instrument as or similar instruments to the carrier of the solo melody. Here, the string pizzicato contrasts with the clarinet melody, making the clarinet sound even warmer. The *con sordino* designation means little here, for pizzicato is not affected very much by mutes. However, in the passage starting with the anacrusis to measure 340, the muted sound of the strings (the violins pick up the clarinet melody, in octaves, played over an accompaniment provided by the lower strings as well as sustained bassoon, horn, and timpani) creates a wonderful contrast to the clarinet presentation.

Timing, placement, and assignment of color all come into play in this example. Giving a new phrase (with its anacrusis, if it has one) a new instrumental color, or placing a rest in the music before a new color enters, are two excellent ways of introducing new melodic elements and making sure they are clearly perceived. (This is especially true in polyphonic textures, discussed later in this chapter.) In the Tchaikovsky example, the upbeat to measure 340 introduces the new violin *arco* color. A more extreme example is heard in the introduction of the clarinet all by itself at the beginning of the excerpt; here, it functions as an eight-measure anacrusis.

EXAMPLE 15-7. Tchaikovsky, *Francesca da Rimini*, mm. 325–349

CD-5/TR. 33

325 Andante

A Cl.

cresc.

dim. et ritenuto ad libitum

333 Andante cantabile non troppo

A Cl. p cantabile più f dim. p

Vln. 1 con sordini pizz. p

Vln. 2 con sordini pizz. p

Vla. con sordini pizz. p

Vlc. con sordini pizz. p

D.B. con sordini pizz. p

339

A Cl. pp

Bsn. p 2. mf

F Hn. 1. p un poco marcato mf

Timp. trem. ppp poco più f

Vln. 1 arco p poco cresc. mf

Vln. 2 arco p poco cresc. mf

Vla. arco p poco cresc. mf

Vlc. mf

D.B. p mf

345
2.
Bsn.
F Hn.
Timp.
più f
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
mf

Earlier chapters that discuss the instrumental choirs separately cite other foreground-background orchestrations. We will give two more examples here.

CD-5/TR. 34

EXAMPLE 15-8. Weber, *Der Freischütz*, Overture, mm. 1–19

1 Adagio
Ob.
B♭ Cl.
Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
pp f p pp

9 Soli
C Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
pp

14 Soli
F Hn.
C Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
mf

Starting in measure 10 in Example 15-8, the strings provide a beautiful accompaniment for four horns. In this example, the strings play foreground material until one measure before the horn entrance, where they change their role from foreground to background, the first and second violins playing arpeggiations and the lower strings playing sustained pitches. The horns sound very fresh here, since this is the first time their color appears in the work.

To understand the orchestral thinking behind the complex scoring in Example 15-9, we must first look at Mahler's piano version of the music. Notice that it has only two components: an eighth-note foreground in the right hand

CD-5/TR. 35

EXAMPLE 15-9. Mahler, *Kindertotenlieder*, "Nun will die Sonn'," mm. 58–61

a. PIANO VERSION

b. ORCHESTRAL VERSION

and an eighth-note background in the left hand. To this kind of note-against-note counterpoint we might infer a third element, an implied low D^2 pedal; a pianist playing these few measures would use the damper pedal to bring out this note. In his orchestral version Mahler indeed writes a pedal note into the fourth horn part and at the beginning, also into the bass clarinet part. The two main parts of the piano version are distributed among several different instruments. No two instruments with identical parts play for more than a few notes at a time. Thus, almost every pitch is colored differently, creating a kind of pointillistic or *Klangfarben* texture that was later made popular by the expressionists. (We will learn more about this type of texture later on in this chapter.) Study this excerpt carefully, and make a list of the doublings used for each gesture—or even each note—so that these composite sounds will become familiar to your ear.

From the time of Wagner and Mahler to the present, composers have availed themselves of the huge orchestral forces developed throughout the nineteenth century. However, on occasion these composers, including Mahler in his *Kindertotenlieder* (discussed above), have largely opted not to write for a large orchestra. But when they do, they emphasize the importance of single instruments and their characteristic sounds rather than the lush combinations favored by other composers. Some believe that treating the large orchestra as a chamber ensemble is a trend that steps away from effective orchestration. We believe both types of texture are valid, provided the orchestra is used with great imagination and skill. If the music is good, the results either way will be most satisfying.

The Voicing of Chords for Full Orchestra

In earlier chapters we discussed the spacing of chord tones within individual chords played by the different orchestral choirs; now let us examine chordal spacing and doubling within successful scorings for complete orchestra. We have already spoken of the three major spacings of chords—juxtaposed (or superimposed), interlocked, and enclosed. In the full orchestra, these spacings are usually combined, as in the following examples. In all of these examples we have marked like instruments with a bracket to highlight which spacings are used between instrumental groupings; all notes are shown at concert pitch.

First, we will set down some general rules to follow when orchestrating a chordal texture:

1. Make the melody notes more prominent than the harmony notes.
2. Assign pitches to the instruments within their best registral positions so that they can be sounded at the desired dynamic.
3. When doubling notes, find instruments that have an acoustic affinity for one another. This is especially important when doubling at pitch.

Beethoven, *Missa solemnis*. In Example 15-10 the tonic chord in measure 1 emphasizes the tonic note D. All the strings—plus the trumpets, three horns, and timpani on D, and both flutes sounding the higher octave—create a rather open sound. Only the oboes, clarinets, second horn, and second bassoon play the other chord tones. Because of their registral distribution they give the impression of realizing the first few overtones of the D fundamental.

The chord in measure 21, on the other hand, sounds fuller because all the sections play all the notes of the tonic chord. In the actual music the entrance of the chorus, supported by the organ, occurs here; this, in addition to the sudden forte dynamic, makes the sound even heavier than what is heard on our recording of this chord, which is played only by the orchestra. Notice that in the doubling of measure 1 the flutes were given the octave above the first violins, while

CD-5/TR. 36

EXAMPLE 15-10. Beethoven, *Missa solemnis*, chords from m. 1 and m. 21

in measure 21 the first flute doubles the first violin at the unison and the second flute plays the A^5 alone. In this most effective spacing, the notes in the upper octave (D^5 to D^6) are doubled by single woodwind instruments only; those in the lower octave (D^3 to D^4) are doubled by many more instruments and therefore given more emphasis.

Weber, *Der Freischütz,* Overture. Example 15-11 shows the climactic chord of the main section of Weber's overture. In the actual music this chord is made more powerful by a string tremolo and a timpani roll.

CD-5/TR. 37

EXAMPLE 15-11. Weber, *Der Freischütz*, Overture, m. 284

Let's study what makes this chord so effective. The strings are juxtaposed from the low C^3 to high G^6. Strangely enough, the second bassoon is the only instrument sounding the low C^2. The brasses are also juxtaposed; only the oboes and clarinets are interlocked. In terms of doubling, Weber must have felt that the second oboe and first trumpet were more similar acoustically than a clarinet and trumpet. It is interesting to notice which instruments are *not* doubled at pitch: Oboe 1, Horns 1 and 4, Trombone 2, and Bassoon 2. The composer obviously felt that these were in such a good registral position that they would be effective alone. Consider the spacings in this chord carefully; you may wish to mimic this when your own work calls for a brilliant chord.

Schumann, Symphony No. 1. Let us now ascertain how Schumann emphasizes the melody and handles the voice leading in the chord progression in Example 15-12. In the actual music Schumann uses double and triple stops to obtain a sweeping sound in the *non divisi* strings, enriching these chords with a ringing effect.

EXAMPLE 15-12. Schumann, Symphony No. 1, first movement, mm. 3–4

CD-5/TR. 38

All pitches in every chord are doubled at least once. All the string notes are doubled by the juxtaposed woodwinds; the horns and trumpets, both in B♭, play the only notes they can in this situation—the "horn 5ths."

EXAMPLE 15-13. Horn 5ths

CD-5/TR. 39

Notice the "academically correct" voice leading of the chords: all 7ths within the V^4_3 chord resolve downward; all tonic and dominant notes remain as common tones wherever possible, except those involved in the "horn 5ths."* It is interesting that Schumann holds back on the use of trombones and timpani in these measures in order to build an even heavier chord in the next phrase.

Brahms, Symphony No. 3. Many Romantic composers loved to end their movements similarly to the way Brahms ended the opening movement to his third symphony—namely, to assign the top notes of the final chord to the winds. But trying to articulate the notes Brahms wrote at such as soft dynamic level, particularly the first flute's high F^6, is very difficult, and the chord always sounds louder than it should.

CD-5/TR. 40

EXAMPLE 15-14. Brahms, Symphony No. 3, first movement, final chord

The flutes can easily overpower the chordal structure, since they are the only instruments playing the two highest notes and are not doubled by other instruments that would neutralize their sharply sounding timbre in this register. If Brahms had assigned the top octave to the strings instead, with the winds doubling an octave below, this chord would be easier to control. But here he could not have done so, because the first flute is simply holding over the top pitch from the previous measure and the strings' previous melodic line is in the same middle register. The spacing in Brahms's chord, however, gives it a beautifully luminous sound, which at the same time is warm and mellow; that only the flutes explore the highest register and all the other instruments play in their mid to low registers also creates a clear separation between high and low at the end of this movement.

For an earlier passage (at the return of the main theme) we give a piano reduction of the full score as well as the score itself.

*Composers used this device when writing parts for natural trumpets and horns. The first, second, and third scale degrees of a melody were harmonized by the intervals of a unison or 6th on the first pitch, a 5th on the second, and a 3rd on the third. This harmonization was used so frequently in the eighteenth and nineteenth centuries that it became known as "horn 5ths," even though only the middle interval was an actual 5th. (See also Example 9-9, above.)

EXAMPLE 15-15. Brahms, Symphony No. 3, first movement, mm. 183–187

a. REDUCTION

183

b. FULL SCORE

CD-5/TR. 41

Allegro moderato

183

Fl. Ob. B♭ Cl. Bsn. Cbsn. C Hn. F Hn. F Tpt. Trb. Timp. Vln. 1 Vln. 2 Vla. Vlc. D.B.

sf f a 2 f marc.

The brilliance of the scoring in this passage neither overwhelms nor overshadows the first and second violins' tune because they are in their best registers. The high flutes reinforce this tune by doubling the melody notes that occur at the beginning of each measure. Notice that each chord is fully represented in all the choirs and in every octave, from C^2 to F^6. We advise you to make your own reduction of the wind and brass chords to find out exactly which notes are doubled and how the voice leading operates in these measures.

Mahler, Symphony No. 1. At the end of Mahler's Symphony No. 1 (Example 15-16) we find a most brilliant chordal sound, aided by string tremolos, rolls in the timpani and triangle, and a cymbal crash. Notice that all the upper octaves contain all chord tones; only the lowest octave, played by the cellos, double basses, tuba, third trombone, and timpani, contain tonic notes only. The sparkling sound is created by the high brass, aided by the doublings one and two octaves higher in the violins, flutes, and piccolos.

CD-5/TR. 42

EXAMPLE 15-16. Mahler, Symphony No. 1, fourth movement, mm. 723–727

Debussy, *La Mer*. We will now study a chord that must be voiced by the composer in such a way that the performers can articulate a *fortissimo* sound and then diminish to *pianissimo*. To make this happen the composer must distribute the pitches among those instruments that can manipulate the dynamic of the notes given to them. In *La Mer*, Debussy does this brilliantly. The highest note ($A\sharp^6$) is assigned to the first violin, piccolo, and harp. Playing a note this high is no problem for the violins, which are able to play any note softly, high or low; the piccolo can do this as well, since it is in a nonexposed register where it

can keep this note, written , under perfect control. The harp provides a series of "pings" that grow softer over the course of four measures. Notice the big gap between low $C\sharp^2$ and the rest of the chord, which is juxtaposed in every choir. The melody note in the two trumpets ($E\sharp^5$) comes out brilliantly in this register; it is doubled at pitch by the second oboe and an octave below by the English horn. Aside from the low C♯ bass notes, this E♯ and the high A♯s are the only notes doubled at pitch; all the other chord tones sound much softer and retain their own individual colors.

EXAMPLE 15-17. Debussy, *La Mer*, second movement, "Jeux de vagues," 4 mm. before 29

CD-5/TR. 43

Doubling Within a Chordal Texture

Before we proceed to an examination of doubling within chordal passages from the literature, we will briefly summarize the reasons for and results of doubling. There are basically two reasons:

1. to raise the dynamic level;
2. to provide subtle coloristic nuances.

Remember that:

1. Doublings at pitch usually result in the loss of individual color characteristics of those instruments involved.
2. Sustained doublings eventually sound tiresome.
3. Octave doublings often give a much clearer, more brilliant result, and also can raise the dynamic level of the music.

How and what to double is a matter of personal preference and conscious decision, in which many factors, including those discussed above, must be con-

sidered. Beethoven, for instance, often used octave doublings to raise the dynamic level of a passage. Mozart, Mendelssohn, Debussy, and Ravel preferred unmixed, pure, soloistic sounds for melodies, but on occasion they also used octave doublings and sometimes very subtle blends. Rimsky-Korsakov favored timbral mixings and large combinations of unison doublings. We should always make our choices of doubling from a position of knowledge and experience. Studying the various possible timbral combinations in the best scores of the past and present can help us gain this knowledge as well as make the most judicious choices.

Unison Doublings. Unison doublings on the same instrument sometimes give an unusual effect to the tone. Because two, three, or four like instruments cannot always play precisely in tune with each other, their combined sound creates many inharmonic partials, which lessen the clarity of the instrument's upper overtones, give a "flatness" to the resulting tones, and diminish the dynamic level of the sound. Many composers consciously seek this effect, as in the following example from Mahler's Symphony No. 4. Here, four flutes play a shrieking, pleading melody that pierces through the thin orchestral texture lying beneath; the minute intonational differences of the flutes, however, also give this passage a beautifully warm quality.

CD-5/TR. 44

EXAMPLE 15-18. Mahler, Symphony No. 4, first movement, mm. 126–141

Fliessend, aber ohne Hast.

If this passage were played by just one flute, it would sound just as loud but also too clean and clear to suit Mahler's intent.

Octave Doublings. One excellent example of using octave doubling to raise the dynamic level is found in Tchaikovsky's *Romeo and Juliet* (Example 15-19). The trumpets play the melody a 2 at pitch, while the accompanying chords, all doubled throughout the orchestra, powerfully punctuate their line. Here the brilliance and forcefulness of the chords is the desired effect, not the subtleties of its inherent colors.

As in this example, the ear is able to distinguish between two ideas presented simultaneously if they are scored with opposing timbres and differing rhythmic gestures. If you use orchestration to clarify your musical ideas you will achieve the desired result.

EXAMPLE 15-19. Tchaikovsky, *Romeo and Juliet*, mm. 334–337

CD-5/TR. 45

334 **Allegro giusto**

Picc.
Fl. a 2
Ob.
A Cl.
Eng. Hn.
Bsn.
F Hn.
E Tpt. a 2
Trb.
Tba.
Timp.
Bs. Dr. *ff*
Vln. 1 unis.
Vln. 2 unis.
Vla. unis.
Vlc.
D.B.

The next very simple example begins as a unison melodic statement (actually in octaves) over a tonic (and dominant, in the timpani) pedal. Starting in measure 174 the melody is carried on in the strings while the rest of the orchestra provides the chordal harmony. The transition from unison to a thicker harmonic texture is facilitated by the sustained pedal tones in the brass and timpani. Notice the wide separation between the pitches of the first flute and strings, and from measure 174 on, between both flutes and strings. Notice, too, the reluctance of the strings to break into harmony, a factor that readies them to begin the figuration. These color and textural divisions make it much easier for the ear to separate melody from the harmony (foreground from background).

CD-5/TR. 46

EXAMPLE 15-20. Schubert, Symphony No. 8, first movement, mm. 170–176

Allegro moderato

170

zu 2

Fl.

Ob.

A Cl.

Bsn.

D Hn.

E Tpt.

Trb.

Timp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

The exquisite passage that recurs three times in the fourth movement of Mahler's Symphony No. 4 is scored differently each time it appears. Mahler creates the heavenly quality of this partial tutti with triads moving in parallel motion, with contrary motion in the bass in the last excerpt. Compare the combinations of instruments in each of the three scorings. The different colorings illustrate an essential aspect of great orchestral thinking: even though much timbral variety is provided, the recognizable texture and similar chord structure that mark the passage's reiterations help this recurring statement unify the movement.

1. Measures 36–39: In the first three measures the harmony underlying the singer's line is given to the flute in its middle register, two muted horns, two low open horns, and harp playing in octaves.

EXAMPLE 15-21. Mahler, Symphony No. 4, fourth movement, mm. 36–39

CD-5/TR. 47

*to be transposed up a perfect 4th.

The muted strings are reserved for the final open 5th sound. Notice that in this example, as well as Example 15-23, a soft cymbal roll with brushes accompanies the first three measures of the passage.

2. Measures 73–76: This version features the strings as the main accompaniment, with a beautiful assist from the low piccolo. The harp writing, first in 3rds, then in octaves, adds to the smooth unison writing in measures 73–74. The softness of this version is aided by a complete D major chord in measure 76 rather than the hollow, open 5th sound of the previous example.

CD-5/TR. 48

EXAMPLE 15-22. Mahler, Symphony No. 4, fourth movement, mm. 72–76

3. Measures 106–111: The final repetition of the phrase is extended and colored in two very distinct ways: first, by very soft brasses with harp (this time the harp, with Horns 2 and 4, moves in contrary motion to the parallel brass chords); then by a lovely, but rare combination: flutes, clarinets, and muted double basses. The harp is the only constant between the two phrases.

EXAMPLE 15-23. Mahler, Symphony No. 4, fourth movement, mm. 106–111

CD-5/TR. 49

*to be transposed up a perfect 4th.

The noble beginning of the prelude in the next example illustrates how to create a dark, loud, majestic color through the orchestration of several semi-independent parts for different instruments. The constantly interchanging parts in this example are characteristic of Wagner's scoring.

Let's examine the first chord. The strings play only an initial, powerful chord using multiple stops. Wagner uses the violins and violas to give a strong accent to the beginning of the melody in measure 1, but then discontinues these instruments until measure 2, where they join the winds in playing the tune. This melody is given first to the trumpets, which are doubled at pitch by acoustically compatible instruments—two oboes and two clarinets—creating a combination reminiscent of the heavy, dark color often associated with band music.

CD-5/TR. 50

EXAMPLE 15-24. Wagner, *Die Meistersinger*, Prelude, mm. 1–9

Sehr mäßig bewegt

2 Ob. a 2 *f (sehr gehalten)*

B♭ Cl. a 2 *f (sehr gehalten)*

F Hn. *f (sehr gehalten)*

Bsn. a 2 *f (sehr gehalten)*

F Tpt. 1, 2 *f (sehr gehalten)*

C Tpt. 3 *f*

3 Trb. *f (sehr gehalten)*

Bs. Tba. *f (sehr gehalten)*

Timp. *f*

Vln. 1 *f (sehr kräftig)*

Vln. 2 *f (sehr kräftig)*

Vla. *f (sehr kräftig)*

Vlc. *f (sehr kräftig)*

D.B. *f*

In measure 2 the trumpets drop out, and are later assigned the secondary role of providing harmonic background in a register where they cannot disturb the stately quality of the passage. One may speculate that Wagner switched the trumpets from providing the melody to providing the harmonic accompaniment because he did not trust the valve trumpets' ability to carry this dignified melody; more likely, he did not want the first melodic statement in the prelude to be quite so climactic, for he does give the entire theme to the trumpets later

on in the prelude. The grandeur of the initial statement is supplied by the first and second violins starting in measure 2, and the oboe and clarinet doubling gives the strings a sharper edge. The inner harmony of these opening measures is filled out by two bassoons, four horns, the first two trombones, and violas. This combination sounds very warm and rich. The very solid bass line is entrusted to a combination of third trombone, tuba, cellos, and basses in octaves. This beautifully balanced homophonic phrase is created by instrumental couplings that Wagner chose to greatest advantage and that you may want to add to your own vocabulary of orchestral sounds.

Study a bit more of the score on your own to see how Wagner cleverly holds back the upper registers, and how by measure 18 those high registers lighten the entire atmosphere and build the crescendo.

Within a Polyphonic Texture

We have already discussed handling polyphonic textures in those earlier chapters devoted to scoring for the individual orchestral choirs; in Chapter 5 we observed some superb scoring of three diverse elements in the second movement of Beethoven's Symphony No. 7 (Example 5-20). In this section we will concentrate on handling foreground, middleground, and background—that is, three or more main musical elements that sound simultaneously—in an orchestral context. You will find that mastering the skills needed to create sophisticated polyphonic textures will take you more time than those needed to create homophonic textures.

Mozart, Symphony No. 41 ("Jupiter")

The end of the "Jupiter" Symphony is one of the monumental examples of polyphonic writing in the Western repertoire. This section introduces five themes, four of which are treated contrapuntally, with the fifth coming in at the section's climax. In the fugal section, which begins this excerpt, the four subjects are introduced successively and then combined in various ways. Here are the five themes that make up the melodic material of this finale, as Mozart worked them out in quadruple counterpoint in his own sketchbook.

EXAMPLE 15-25. The Five Themes in Mozart's Symphony No. 41 ("Jupiter"), fourth movement, mm. 368–424

First theme
Second theme
Third theme
may begin
Fourth theme
Fifth theme

Each of the five gestures has its own characteristic rhythm and melodic profile. We can easily recognize each theme in the rather complex orchestral texture of this excerpt. The first theme, a kind of cantus firmus, also appears in the first and the third movements and serves as a unifying element for the entire symphony.

Now let us go to the score. In measures 372 through 388, Mozart doubles only the first theme; the other tunes, as they are brought in, are played by only one section of the string choir. Each rendition of the first theme is colored somewhat differently, using one member of the string choir doubled by instruments of other choirs: (1) bassoons, horns, cellos; (2) flute, oboes, violas; (3) flute, oboes, second violins; (4) flute, oboes, first violins. In this contrapuntal texture Mozart treats the double bass as a completely independent member of the ensemble, which is unusual in the Classical period.

EXAMPLE 15-26. Mozart, Symphony No. 41 ("Jupiter"), fourth movement, mm. 368–423

CD-5/TR. 51

383

Fl.
2 Ob.
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

f

390

Fl.
2 Ob.
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

396

Fl.
2 Ob.
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

402

Fl.
2 Ob.
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

408
Fl.
2 Ob.
a 2
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

414
Fl.
2 Ob.
2 Bsn.
2 C Hn.
2 C Tpt.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

As the texture thickens, the third theme is strengthened by coupling the violas and cellos in 3rds in measures 382–383, and the violas and second violins in measures 386–387. By measure 388 the weighty texture brings together all four themes at once as well as an added pedal in the brass. Once the web of counterpoint becomes truly involved Mozart keeps an established color combination long enough to play the entire theme intact so that the listener is not overburdened with the task of picking out the main musical ideas from a maze of constantly shifting colors. From measure 389 to measure 400 the following colors are constant:

1. first violin doubled by flute at pitch (third theme);
2. second violin doubled by first oboe at pitch (third, fourth, then second themes);
3. violas doubled by second oboe at pitch (fourth, second, then first themes);
4. cellos doubled by first bassoon at pitch (second, first, then third themes);
5. double basses doubled by second bassoon at the octave (first, third, then fourth themes);
6. horns, trumpets, and timpani providing the cohesive tonic–dominant, nonthematic pedal notes.

The tremendous climax that has been building occurs at measure 402, immediately introducing the fifth theme in an abrupt shift to homophonic texture. This closing section also emphasizes the fourth theme, played three times in its entirety (both in unison and with a homophonic accompaniment). Mozart uses many instrumental doublings here to augment the dynamic level of the passage as well as to bring out each theme so that it is clearly heard.

Wagner, *Die Meistersinger*, Prelude

Wagner cleverly combines the three thematic elements in the following excerpt to create an exciting and complex but clear passage. The listener perceives these elements as separate because (1) each is assigned a distinctive color combination; (2) each has a different rhythmic profile; and (3) all three were heard earlier in the prelude. The two main elements, the broad double bass and first violin tunes, are heard against an arpeggiated, faster-moving inner line.

Notice that the color of each theme is made up of a fairly traditional nineteenth-century instrumental combination of at least one string, one woodwind, and one brass instrument:

First theme: double basses, tuba, and two bassoons (the double basses sound an octave lower);
Second theme: Violin 1, doubled at pitch by the first clarinet and first horn and doubled an octave lower by the cellos;
Third theme: second violin and viola, two flutes, two oboes, second clarinet, Horns 2, 3, 4, and second trumpet (playing some of the notes), creating three voices in harmony, all of which are doubled at the octave.

Another factor that differentiates each theme is the unique articulation Wagner gives to it:

First theme: each note is articulated separately (in the score, *sehr markiert*);
Second theme: the notes are played legato (*sehr ausdrucksvoll* [very expressively]);
Third theme: each note is played staccato (*immer gleichmäßig leicht* [always similarly light]).

Studying works such as the Prelude to *Die Meistersinger* proves that the best way to emulate the big orchestral sound of the great nineteenth-century orchestrators, whether the dynamic be forte or piano, is to employ a combination of instruments from the different orchestral choirs when doubling a passage. In addition, to ensure clarity in lush orchestrations, give each of the thematic elements a distinct rhythmic profile. And finally, to help the listener distinguish between the different elements in a complex orchestral texture, vary the articulations.

EXAMPLE 15-27. Wagner, *Die Meistersinger*, Prelude, mm. 158–161

CD-5/TR. 52

158 Sehr mäßig bewegt

Fl.
Ob.
B♭ Cl.
F Hn. 1, 2, 3, 4
Bsn.
F Tpt. 2
C Tpt. 3
Trb.
Tba.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

stacc.
p (ausdrucksvoll)
zu 2
mf (sehr markiert)
p (aber sehr markiert)
p (aber sehr ausdrucksvoll)
p scherzando
scherzando
(immer gliechmäßig leicht)
p (aber sehr ausdrucksvoll)
mf (aber sehr markiert)

Within a Varied Texture

The next four examples are from works that combine three or more elements that are not of equal thematic importance. These foreground-middleground-background combinations occur frequently in orchestral literature.

CD-5/TR. 53

EXAMPLE 15-28. Rimsky-Korsakov, *Sheherazade,* fourth movement, mm. 482–493

488

Picc.
Fl.
Ob.
A Cl.
Bsn.
F Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2

Rimsky-Korsakov, *Sheherazade*

In Example 15-28, the main theme is played by a poignant combination of cello in a high register, doubled at pitch by the first two horns and the two clarinets an octave higher. The clarinets are in an excellent register to be heard distinctly. The middleground, a type of dancelike accompaniment, is provided by the piccolo and two flutes playing double-tongued staccato notes and by the violins playing *spiccato*. The background is sustained by the oboes, second bassoon, Horns 3 and 4, violas, and double basses; it is arpeggiated by the first bassoon and violas. The broken chords played by the harp set off the first phrase from the second and support the final cadence in measure 494 (not shown here).

Holst, *The Planets*, "Jupiter"

The passage in Example 15-29 expertly combines three musical elements to create a sparkling, exciting, and virtuosic texture that culminates in the enormous climax occurring in measure 156. The foreground, or main theme, is played at first by the four trumpets, then repeated by tenor trombones, tenor and bass tubas, violas, and cellos. The middleground, or secondary theme, is

CD-5/TR. 54

EXAMPLE 15-29. Holst, *The Planets*, "Jupiter," mm. 140–156

148

Picc.
Fl.
Ob.
Eng. Hn.
B♭ Cl.
Bs. Cl.
Bsn.
Cbsn.
Hn.
Tpt.
Ten. Trb.
Bs. Trb.
Ten. Tba.
Bs. Tba.
Timp.
Cymb.
Glsp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

first sounded by two tenor trombones and then by six horns in unison and Trumpets 1 and 2. The background, or harmonic figuration, gives the passage a wonderful buoyancy. It is scored for a combination of two piccolos, two flutes, three oboes, three clarinets, and glockenspiel, which color the violin ostinato. The rest of the orchestra joins in the big tutti starting in measure 148; the two trumpets add strength to this melodized harmonic background. The *secco*-like chords in measures 140 through 148 and the heavy bass notes of the harmony from measures 150 to 156 stabilize the rhythmic flow and keep it moving. The chord at measure 156 sounds glorious after this climactic buildup, helped by its surprising modulation as well as by the cessation of all motion, while we expectedly wait for the next event—the brass fanfare.

Bloch, *Schelomo*

Example 15-30, from Bloch's cello concerto *Schelomo*, also presents two distinct melodic ideas with harmonic background. The two main elements, with their own distinct shapes and rhythmic profiles, however, are more complex than those in the Holst example, given above. By this time the listener is familiar with these ideas, which were stated separately earlier in the concerto.

Here are the two main ideas, along with a third—a melodic fragment first heard at the beginning of the concerto.

EXAMPLE 15-30. The Melodic Elements in Bloch's *Schelomo*

In Example 15-31, measure 230, this fragment occurs as a unison melody, but in octaves. The harmonic implications of this fragment then become the background in measure 235.

Bloch, like Holst, does not color particular pitches or passages by combining the different orchestral choirs. Rather, he is more interested in separating the choirs so that we can perceive the different musical elements as distinct entities. This type of orchestrational concern has become increasingly popular in the last one hundred years, especially with American composers.

To build the climax starting in measure 240, Bloch adds the contrabassoon to the texture, joining the double bass to double the trumpets' and trombones'

EXAMPLE 15-31. Bloch, *Schelomo*, mm. 228–243

CD-5/TR. 55

♩ = 108–112

228

Fl. 1, 2 — *f* — a 2 — *f*

Fl. 3 (Picc.) — *f* — *f*

Ob. 1, 2 — *f* — a 2 — *f*

Eng. Hn. — *f*

B♭ Cl. 1, 2 — *f* — a 2 — *f*

Bs. Cl. — *f* — *f* — *f* — *mf*

Bsn. 1, 2 — *f* — a 2 — *f* — *mf*

Cbsn. — *f* — *f* — *mf*

F Hn. 1, 2 — *f* — *f* — *f* — *mf*

F Hn. 3, 4 — *f*

C Tpt. 1, 2 — *f* — a 2 — *f*

C Tpt. 3 — *f* — *f*

Trb. 1, 2 — *sfp*

Trb. 3 Tba. — *sfp*

Timp. — *sfz p* — *poco cresc.*

Perc.

Vlc. solo — *ff*

Vln. 1 — al solite — IVa — *f* — *senza dim.*

Vln. 2 — al solite — IVa — *f* — *senza dim.*

Vla. — *f* — *f* — *mf*

Vlc. — div. arco — *f* — *f* — *mf*

D.B. — pizz. — *f* — arco — *f* — *f* — *mf*

poco rit.

Più vivo (♩ = ♩)

232

Fl. 1, 2
Fl. 3 (Picc.)
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
Bs. Cl.
Bsn. 1, 2
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
C Tpt. 1, 2
C Tpt. 3
Trb. 1, 2
Trb. 3 Tba.
Timp.
Perc.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2

marc. molto

Bs. Dr.
becch. di timpano

cresc.

236 L

Fl. 1, 2 — *mf* — *cresc. poco a poco*

Ob. 1, 2 — *cresc. poco a poco*

Eng. Hn. — *cresc. poco a poco*

B♭ Cl. 1, 2 — *cresc. poco a poco*

Bs. Cl. — *cresc. poco a poco*

Bsn. 1, 2 — *cresc. poco a poco*

F Hn. 1, 2 — *cresc. poco a poco*

F Hn. 3, 4

C Tpt. 1, 2

C Tpt. 3

Trb. 1, 2 — *f*

Trb. 3 / Tba.

Perc. — *cresc. poco a poco*

Vln. 1 — *cresc. poco a poco*

Vln. 2 — *cresc. poco a poco*

Vla. — *cresc. poco a poco*

Vlc. — *cresc. poco a poco*

D.B. — *f*

240

Fl. 1, 2
Fl. 3 (Picc.)
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
Bs. Cl.
Bsn. 1, 2
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
C Tpt. 1, 2
C Tpt. 3
Trb. 1, 2
Trb. 3 Tba.
Perc.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2 — *f* — *cresc.*

main theme. In addition, the second and third flutes join the first flute in doubling the string section's middleground theme (measure 241). The crescendo heard in these measures, as well as the one heard earlier just before measure 235, is aided by percussion rolls, first on the timpani and then on the bass drum; played here with timpani sticks, the bass drum produces a slightly more articulate, less heavy sound, that is still somewhat wilder than that coming from the timpani. The composer wisely marks both percussion instruments piano before the crescendo; a *fortissimo* roll not only would obliterate the rest of the orchestra but also completely change the emphasis of this passage, which combines the rhythmically and gesturally diverse themes into a heterogeneous web of sound that increases the musical tension and dynamic level in building the climax. Once the climax occurs (measure 244), the theme that triumphs over the previous combination of themes sounds completely new, even though we have already heard it many times before in this piece.

Schoenberg, *Five Pieces for Orchestra*

Example 15-32 presents a sophisticated and complex contrapuntal excerpt whose orchestration is clear and superbly managed, from Schoenberg's *Five Pieces for Orchestra*. Schoenberg facilitated the reading of his complex scores by using special signs to designate the main idea (or ideas): H⌐ meaning *Hauptstimme* (principal voice) and ⌉ used when that voice ceases to be the main gesture (in later scores, he also used the sign N⌐, meaning *Nebenstimme*, or subsidiary voice*). In this piece he also provides a range of dynamics, indicating that the principal gestures are to be played louder than the subsidiary ones. Notice at measures 423–424 the H⌐ part, played by the cello, is marked piano, while the subsidiary ideas (Trumpet 2, D clarinet, Trombone 3, English horn, and even the flutes) are marked *pianissimo*.

In presenting many diverse elements simultaneously, Schoenberg carefully assigns each fragment to an instrument or group of instruments that can be clearly heard in the complex texture. Let's look, for instance, at measures 425–438. While the oboe's major gesture in measures 425–426 does not need any doubling to come through, that played by the flutes and second violins in measures 431–433 does need the help of the clarinets in measure 432, since the brass writing is intensified in that measure. In measures 427–429 the first and second clarinets, and then the oboes, help delineate the *Hauptstimme*, which the third clarinet plays in its complete form. Here, this tune might otherwise be obscured by the more prominent combination of English horn, Clarinet 2, and violas, which play a subsidiary but quite active countergesture in measure 429.

Rather than orchestrating by instrumental choir, Schoenberg carefully mixes the colors of all the choirs to get the most thrilling effect. Many of the doublings in this excerpt are quite unusual, and you may wish to spend time examining them carefully and separating out the musical elements to make this treatment an integral part of your roster of orchestrational techniques. You will see that the doublings occur only at pitch or one octave apart.

---

*In the scores created during Schoenberg's later years in the United States, he labeled the principal voice ⌐P and the secondary voice ⌐S. See Examples 17-18–17-20.

CD-5/TR. 56

EXAMPLE 15-32. Schoenberg, *Five Pieces for Orchestra*, Op. 16, No. 5, "Das obligate Rezitativ," mm. 421–455

Allegretto

421

Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
D Cl.
B♭ Cl. 1, 2
A Cl. 3
B♭ Bs. Cl.
Bsn. 3
F Hn. 1, 3
F Hn. 2, 4
B♭ Tpt. 1, 2
B♭ Tpt. 3
Trb. 1, 2
Trb. 3, 4
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

dolce
p espress.
zu 2
leicht
espress.
1. ohne Dämpfer
p dolce
mit Dämpf.
espress.
1. ohne Dämpfer
legato
pizz.
perl
p espress.

432

Picc. 1, 2
Fl. 1, 2
Ob. 1, 2
Ob. 3
Eng. Hn.
D Cl.
B♭ Cl. 1, 2
A Cl. 3
B♭ Bs. Cl.
Bsn. 1, 2
Bsn. 3
Cbsn.
F Hn. 1, 3
F Hn. 2, 4
B♭ Tpt. 1, 2
B♭ Tpt. 3
Trb. 1, 2
Trb. 3, 4
Bs. Tba.
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

zu 2
2. m. D.
1. o. D.
3. m. D.
4. o. D.
cresc.
Schalltrichter oben
2. ohne Dämpfer
3. 4. ohne Dämpfer
arco
3 fach get.
alle

443

Picc. 1, 2

Fl. 1, 2

Ob. 1, 2

Ob. 3

Eng. Hn.

D Cl.

B♭ Cl. 1, 2

A Cl. 3

B♭ Bs. Cl.

Bsn. 1, 2

Bsn. 3

Cbsn.

F Hn. 1, 3

F Hn. 2, 4

B♭ Tpt. 1, 2

B♭ Tpt. 3

Trb. 1, 2

Trb. 3, 4

Bs. Tba.

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

zu 2

1. m. D.

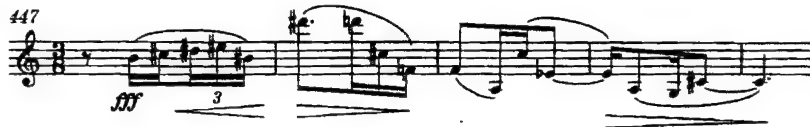
Harfe u. Celesta zusammen

Harfe allein

mit Dämpfer

Let us look closely at one particular spot: measures 447–451. We find the following principal idea:

EXAMPLE 15-33. Principal Melodic Idea in Schoenberg's *Five Pieces for Orchestra*, Op. 16, No. 5



Schoenberg considered all instruments capable of performing all musical functions—that is, any instrument could present foreground, middleground, or background material. In order to give the impression of a very smooth line, the composer quietly adds in instruments that can cover this extremely wide range. He begins with a combination of woodwinds (Flutes 1 and 2, Oboes 1 and 2, Clarinets 1, 2, and 3). Then, to bring out the high note reached by a skip of a 10th and to offset the rather thin, high oboes, he adds the second violins and the piccolo clarinet on that note. For the final beat of measure 448 he brings in the English horn, bass clarinet, and Bassoons 1 and 2, which bridge the registral gap by extending the range of the *Hauptstimme* downward. The second violins introduce the string sound into the *Hauptstimme* mix; then the violas (supported by the first violins) complete the phrase. The entrance of the first violins in measure 448 on the dissonant note E^6 adds momentary tension; this dissonance finally "resolves" to the $C\sharp^4$ in measure 450. In measures 452–456, Schoenberg gives a soft, high, lyrical solo to the muted first trombone rather than to the cello. The spacing and color combination of the soft wind chord in measure 455 creates a sonority that you may also wish to add to your vocabulary of orchestral techniques.

Interestingly, this orchestration is much closer to the rich nineteenth-century orchestral sound than to the leaner twentieth-century sound, especially in measures 434–439. However, Schoenberg's use of extreme ranges is more modern and adds to the tension as well as the expansiveness of this effectively orchestrated work.

ORCHESTRATING A MELODY OR PRIMARY GESTURE

Throughout this chapter we have discussed melody, the main voice or primary gesture, in the context of an entire orchestral texture. For the moment let us isolate melody from other musical considerations such as rhythm and harmony to explore additional possibilities for scoring a principal theme effectively. The famous English horn solo from the *Roman Carnival* Overture by Hector Berlioz will serve as our model.

EXAMPLE 15-34. Berlioz, *Roman Carnival* Overture, mm. 21–28

21 **Andante sostenuto**

Eng. Hn.*

mf espress.

25

* sounds a perfect 5th lower.

Beginning on concert pitch C^4, this passage could be played by flute, oboe, clarinet, and even solo bassoon (although on this instrument the melody would sound a bit high and strained). This melody is also playable by all the strings, but it would sound quite awkward on the double bass. The trumpet, horn, and even the trombone could play the melody, but on this last instrument the topmost notes would sound pinched at the very least; in this high, intense register the instrument probably would not project the quiet elegance the tune seems to demand. The instruments that could most successfully negotiate this line are the English horn, alto flute, or soprano, alto, and tenor saxophones.

Here is where choice and composer's intent come into play. After ascertaining a newly written tune's character, a composer selects a particular solo instrument that can play the tune in the appropriate range and that suits the melody's emotional and timbral qualities. If this tune appeared in a higher or lower range, the choice of instrument might very well be different.

The dynamic level of the melody also influences the choice of instrument; here is where knowing the strengths and weaknesses of every instrument in each register can be immensely helpful in choosing the most suitable instrument.

To raise a melody's dynamic level or to strengthen its prominence in some other way, a composer or orchestrator can use any of the following techniques:

1. Double the melody at pitch, preferably with instruments that are acoustically compatible with the assigned instrument. Here are a few of the instruments that are used most frequently for at-pitch doublings:

   English horn, doubled by oboe, bassoon, muted trumpet, viola, or cello;
   Flute, doubled by violin or clarinet (also viola or cello when the melodic range permits);
   Oboe, doubled by English horn, flute, muted trumpet, horn, violin, or viola;
   Clarinet, doubled by flute, violin, viola, cello, horn, or even trumpet;
   Bassoon, doubled by oboe, English horn, all strings, soft trombone, or tuba.

   Since at-pitch doublings change the basic tone quality of the resulting sound, you should seriously consider all appropriate mixtures before deciding on which among them to use. We recommend reserving doubling at pitch for tutti passages and for very special effects.
2. Use octave doublings: that is, add instruments that are capable of playing the melody one or more octaves above or below. This type of doubling resembles that played on the organ: pulling the 4′ or 2′ stops to extend the range one or two octaves upward, or the 16′ or 32′ stops to extend the range one or two octaves downward. Doubling a tune in a three-octave spread, for instance, such as with two flutes and piccolo, English horn, two oboes, bass

clarinet, B♭ clarinet, and E clarinet, is more desirable and can be used in many types of passages.

3. Double only some of the melody notes, or create an elaboration of the melody on a doubling instrument. In this regard you may wish to refer back to examples of each of these techniques given earlier in this chapter, as well as in Example 8–41, which shows a passage from Debussy's *La Mer*. Here are two hypothetical examples of how Berlioz could have created a melodic elaboration of his tune:

EXAMPLE 15-35. Elaborating a Melody in Berlioz's *Roman Carnival* Overture

USING THE ORCHESTRA TO CREATE SPECIAL EFFECTS

Scoring *sforzandi* and *forte subito piano*

Having an entire orchestra as your instrument enables you to use a variety of devices to accomplish a particular effect. Often in *sforzandi* passages, accenting a note does not sufficiently emphasize it. Here are some suggestions, all of which are illustrated in Example 15-36:

1. Combine a string pizzicato with a longer note in the winds (as for instance, in Beethoven's Symphony No. 1, first movement, beginning).
2. Combine a short *sforzando* trumpet note with sustained notes in the strings.
3. Combine a short *sforzando* note in the oboes with sustained notes in the strings.
4. Combine pizzicato notes in the violas with sustained notes in the violins.

EXAMPLE 15-36. Scoring Orchestral *sforzandi*

CD-5/TR. 57

The most effective way of scoring *forte subito piano* for orchestra is to have one section play a note or chord *fortissimo* and before that loud sound ends, carefully add another choir or combination of instruments playing piano and sustain this new group of instruments at that dynamic level. When the loud chord cuts off, listeners will perceive a *subito piano*. It is essential that the two groups of instruments overlap.

CD-5/TR. 58

EXAMPLE 15-37. Scoring Orchestral *forte subito pianos*

Dovetailing or Overlapping

In any kind of passage where there is a swapping of parts between similar instruments to create a seamless color change, make certain that your seams don't show (Example 15-38a)—unless you intend each group of six notes to be accented (Example 15-38b):

CD-5/TR. 59

EXAMPLE 15-38. Overlapping and Nonoverlapping Parts

a. VERY SMOOTH DOVETAILING

b. NONOVERLAPPING PARTS

Coloring a Note

This technique can be accomplished in a variety of ways.

Coloring a Single Note

EXAMPLE 15-39. Coloring a Sustained C

CD-5/TR. 60

Coloring Each Note with a Different Instrument

EXAMPLE 15-40. Changing the Color of Each Note

CD-5/TR. 61

Using Alternate Fingerings to Color a Pitch on the Same Instrument or on Like Instruments

This intriguing and effective technique for coloring a pitch is a rather recent development.

EXAMPLE 15-41. Coloring a Single Pitch by Using Alternate Fingerings

CD-5/TR. 62

It is relatively easy to change the tone color on string instruments by specifying the string on which a particular note is to be played. (You may wish to review Chapter 3 for details.) On brass instruments, this can be achieved by using alternate fingerings, but we advise you to first consult a professional brass player to determine how best to achieve your desired result.

Pointillistic Scoring and *Klangfarbenmelodie*

Pointillistic scoring is very similar to the technique of coloring each pitch in a melody by using a different instrument (Example 15-40). Anton Webern was one of the proponents of this kind of scoring, which has also been called *Klangfarbenmelodie* (Ger., "tone color melody").* We imitate his technique in the following example, also assigning a different dynamic to each note as he did, as well as adding some stylistically characteristic octave displacements.

CD-5/TR. 63

EXAMPLE 15-42. Scoring "Pointillistically"



The resulting fragmented melody can be considered an aural analogue of the French school of pointillistic painting that was fashionable around the turn of the twentieth century. Pointillistic painters combined tiny dots of different unmixed colors to achieve their representational effects.

To appreciate the full impact of the pointillistic or *Klangfarben* technique as applied to music we will study the first fourteen measures from the first movement of Webern's Symphony Op. 21. You might also wish to study measures 35–39 on your own. This work is based on the following tone row; notice that the second hexachord is the retrograde of the first, beginning a tritone higher:

EXAMPLE 15-43. Tone Row for Webern's Symphony, Op. 21



This row has many different permutations in the work itself, which are noted in the condensed score (Example 15-44a). Notice that Webern gives almost every pitch a different instrumental color or a different playing technique; in measures 5–7 the viola plays three successive pitches, two pizzicato and one *arco*. Since this is a strict twelve-tone work, pitches do not have the same melodic or harmonic functions as in traditional tonal music. Rather, each pitch is important for its own sake; the interpreter has to mentally construct musical lines based on the row from the seeming isolation of each pitch or gesture. To aid in the understanding of the linear logic of the passage, Webern gives the durations, articulations, and dynamics in the score; the dynamics in particular must be strictly

*The term *Klangfarbenmelodie* is often applied to music in which a repeated pitch is colored by different orchestral instruments. However, the archetypical *Klangfarbenmelodie* is a continuous phrase with almost every one of its pitches colored by a different instrument.

observed. Because of the constant variation of colors, the overall effect of this passage is one of contrapuntal density, even though the actual texture is very sparse.

EXAMPLE 15-44. Webern, Symphony, Op. 21, mm. 1–14

a. CONDENSED SCORE

Ruhig schreitend (♩ = ca. 50)

CD-5/TR. 64

b. FULL SCORE

1 2 3 4 5 6 7
Cl.* Hn. 1* Hn. 2* Hp. Vln. 2 Vla. Vlc.
mp p p p p p pizz. arco pizz. mp arco mp p p

* sounds as notated.

8 9 10 11 12 13 14
Cl. Bs. Cl. Hn. 1 Hn. 2 Hp. Vln. 1 Vla. Vlc.
pp pp p gedämpft offen mp p pp p p pp p pp p

Pointillistic or *Klangfarben* scoring can conceivably be applied to tonal music, especially if you use many octave transpositions, thereby creating a two-tiered melody. For such a phenonemon you may wish to study Webern's Passacaglia, Op. 1. This work uses the music of Bach and Brahms as models, but it definitely sounds like a twentieth-century work; Webern uses the pointillistic method of coloring pitches to make a *Klangfarbenmelodie* out of his angular tonal melody.

ADDITIONAL ORCHESTRAL WORKS FOR STUDY

Classical:

Beethoven, Symphony No. 4, first movement
Beethoven, Symphony No. 7, fourth movement
Haydn, Symphony No. 104, first movement
Haydn, *Symphonie Concertante* in B♭ major, first movement
Mozart, Symphony No. 36 ("Linz"), last movement

Early Romantic:

Berlioz, *Roman Carnival* Overture
Bizet, Symphony No. 1, first movement
Mendelssohn, *A Midsummer Night's Dream*, Overture
Rossini, *La Gazza ladra*, Overture
Schubert, Symphony No. 8, second movement
Schumann, Symphony No. 4, last movement

Late Romantic:

Brahms, *Variations on a Theme by Haydn*
Bruckner, Symphony No. 4, Scherzo
Bruckner, Symphony No. 9, first movement
Chabrier, *España*
Dukas, *L'Apprenti sorcier*
Liszt, *Les Préludes*
Mahler, Symphony No. 1, first movement
Mahler, Symphony No. 5, first movement
Rimsky-Korsakov, Suite from *Le Coq d'or*
Saint-Säens, *Danse macabre*
R. Strauss, *Don Juan*
R. Strauss, *Tod und Verklärung*
Tchaikovsky, *Romeo and Juliet* Overture
Tchaikovsky, Symphony No. 4, finale
Wagner, *Siegfried*, Funeral music
Wagner, *Tannhäuser*, Overture and Venusburg music

Impressionistic:

Debussy, *Jeux*
Debussy, *La Mer*, last movement
Debussy, *Nocturnes*, "Nuages" and "Fêtes"
Falla, Suite from *The Three-Cornered Hat*
Ravel, Piano Concerto in G major
Ravel, *Rapsodie espagnole*

Early Twentieth Century:

Barber, *The School for Scandal* Overture
Bartók, *Dance Suite*
Bartók, Piano Concerto No. 2, last movement

Berg, *Lulu* Suite
Berg, *Three Pieces for Orchestra*
Britten, *Four Sea Interludes* from *Peter Grimes*
Copland, *Music for the Theater*
Harris, Symphony No. 5
K. A. Hartmann, Symphony No. 6
Hindemith, *Die Harmonie der Welt*
Hindemith, *Sinfonia serena*
Piston, Symphony No. 4, second movement
Prokofiev, Piano Concerto No. 3, first movement
Prokofiev, Symphony No. 5, first movement
Schoenberg, *Five Pieces for Orchestra*, Op. 16
Schoenberg, *Gurrelieder*
Sessions, Symphony No. 2, first movement
Shostakovich, Symphony No. 1, first movement
Shostakovich, Symphony No. 15, first movement
Stravinsky, *Concerto for Piano and Winds*
Stravinsky, *Feu d'artifice*
Stravinsky, *Petrushka*
Varèse, *Amériques*
Vaughan Williams, Symphony No. 4
Bach-Webern, *Ricercare* (pointillistic scoring)
Webern, *Six Pieces for Orchestra*, Op. 6

Late Twentieth Century:

J. Adams, *Harmonielehre*
D. Amram, *Triple Concerto*
L. Andriessen, *De Staat*
M. Babbitt, *Correspondences*
P. Boulez, *Rituel in Memoriam Maderna*
P. Boulez, *Le Soliel dex eaux*
E. Carter, *Double Concerto* (piano and harpsichord)
P. Maxwell Davies, *Prolation*
J. Druckman, *Prisms*
M. Feldman, *Structures for Orchestra*
I. Fine, Symphony No. 1
H. W. Henze, Symphony No. 8
B. Kolb, *Grisaille*
H. Lazarof, Concerto for Orchestra
G. Ligeti, *Atmospheres*
G. Ligeti, *Lontano*
S. Mackey, *Tilt*
J. MacMillan, Concerto for Piano and Orchestra
B. Maderna, *Aura*
D. Martino, Concerto for Saxophone and Orchestra
W. Mathias, Symphony No. 2
O. Messiaen, *Réveil des Oiseaux*
O. Messiaen, *Turangalîla-symphonie*
T. Musgrave, Concerto for Orchestra
A. Pärt, *Tabula Rasa*
K. Penderecki, Symphony No. 2 (*Christmas Symphony*)
G. Perle, *Three Movements for Orchestra*
G. Pettersson, Symphony No. 6
C. Rouse, *The Infernal Machine*

P. Ruders, Clarinet Concerto
A. Schnittke, Symphony No. 4
G. Schuller, *Seven Studies on Themes of Paul Klee*
W. Schuman, *Credendum*
J. Schwantner, *Sudden Rainbow*
R. Shapey, *Symphonie Concertante*
A. Singleton, *Shadows*
H. Smith, *Ritual and Incarnations*
K. H. Stockhausen, *Hymnen*
T. Takemitsu, *Visions*
M. Tippett, Symphony No. 2
I. Xenakis, *Metastasis B*
B. A. Zimmermann, *Stillness and Return*

Additional American Orchestral Works:

In this list we provide only one work per composer.

J. Adams, Violin Concerto
S. Adler, Flute Concerto
S. Albert, *River Run*
D. Asia, Symphony No. 2
M. Babbitt, *Relata II*
C. Baker, *Bead Game*
S. Barber, *Medea*
L. Bassett, *Echoes from an Invisible World*
R. Beaser, Concerto for Piano and Orchestra
L. Bernstein, Symphony No. 2, "The Age of Anxiety"
W. Bolcom, Symphony No. 5
J. Cage, *Atlas Eclipticalis*
E. Carter, *Variations for Orchestra*
G. Chadwick, Symphony No. 3
Chen Yi, Symphony No. 3
M. Colgrass, *As Quiet As*
A. Copland, Symphony No. 3
J. Corigliano, Symphony No. 1
H. Cowell, *Saturday Night at the Firehouse*
P. Creston, Symphony No. 2
D. Crockett, *Melting Voices*
G. Crumb, *Of Time and the River*
D. Diamond, Symphony No. 4
J. Druckman, *Windows*
D. Del Tredici, *Final Alice*
D. Erb, *Symphony of Overtures*
L. Foss, *Time Cycle* (full orchestra version)
D. Freund, *Radical Light*
H. Hanson, Symphony No. 2
J. Harbison, Symphony No. 2
R. Harris, Symphony No. 3
S. Hartke, Concerto for Violin and Orchestra
S. Hodkinson, *Sinfonia Concertante*
A. Hovhaness, *Mysterious Mountain*
K. Husa, Symphony No. 2
A. Imbrie, Symphony No. 3
C. Ives, Symphony No. 4

K. Kennan, *Three Pieces for Orchestra*
A. J. Kernis, Symphony No. 2
L. Kirchner, *Music for Cello and Orchestra*
M. Kupferman, *Symphonic Odyssey*
E. Laderman, Symphony No. 5
L. Larson, Symphony: *Water Music*
B. Lees, Concerto for String Quartet and Orchestra
J. A. Lennon, *Symphonic Rhapsody*
W. McKinley, *Three Poems of Pablo Neruda*
C. McTee, *Circuits*
P. Mennin, Symphony No. 5
J. K. Paine, Symphony No. 2
S. Paulus, Symphony in Three Movements
V. Persichetti, Symphony No. 4
W. Piston, Symphony No. 6
M. Powell, *Modules*
S. Ran, Symphony No. 1
B. Rands, *Canto del Sol*
S. Reich, *Music for a Large Ensemble*
G. Rochberg, Symphony No. 2
N. Rorem, Symphony No. 3
C. Rouse, Symphony No. 2
C. Ruggles, *Sun-Treader*
G. Schuller, *Of Reminiscences and Reflections*
W. Schuman, Symphony No. 3
J. Schwantner, Concerto for Percussion and Orchestra
R. Sessions, Symphony No. 1
H. Shapero, Symphony for Classical Orchestra
Bright Sheng, *H'un*
M. Shrude, "Into Light"
S. Silver, *Three Preludes for Orchestra*
R. Starer, Cello Concerto
S. Stucky, *Dreamwaltzes*
R. Sierra, *Idilio*
C. Theofanidis, *On the Edge of the Infinite*
A. Read Thomas, *Vigil for Cello and Orchestra*
Tan Dun, *Death and Fire*
V. Thomson, *The Plow That Broke the Plains*
F. Ticheli, *Radiant Voices*
M. Torke, *Ecstatic Orange*
J. Tower, *Sequoia*
C. Ung, *Spirals*
R. Ward, Symphony No. 6
G. Walker, *Variations for Orchestra*
R. Wernick, *Visions of Terror and Wonder*
D. Welcher, *Prairie Light*
J. Zaimont, Symphony No. 1
E. Zwilich, Symphony No. 1

16
THE ORCHESTRA AS ACCOMPANIST

The orchestra as an accompanying instrument, particularly for the voice, considerably predates its existence as an independent body. In fact, historical evidence indicates that vocal music was by far the most important body of composed works in Western music until about 1600, when instrumental ensembles, including early orchestral groups, began to achieve greater autonomy. The early orchestra was helped by the ascendancy of opera, the shift of musical patronage from the church to royalty and then to the public, and technical improvements in instruments. However, the orchestra's older role as an accompanying body for sacred and secular vocal works has persisted to this day. With the growth and development of the concerto grosso as well as the rise of the solo concerto throughout the seventeenth century, composers greatly expanded, enhanced, and refined the nature and function of orchestral accompaniment.

In this chapter we will examine how the orchestra functioned as accompanist to featured soloists in concertos as well as to vocal soloists or choruses within operas, cantatas, song cycles, and other types of vocal works.

THE CONCERTO

Concertos have been written for all instruments. Before 1900 the piano was the favorite solo concerto instrument because it mixes relatively well with all orchestral instruments but blends with none. The piano stands out from any orchestral combination of instruments more prominently than solo orchestral instruments, which instead tend to blend in with the orchestral texture. When writing a concerto for one or more solo orchestral instruments, you must take more care and consideration in providing an appropriate orchestral accompaniment—not to mention an effective solo part. Perhaps to offset the tendency of solo orchestral instruments to blend in too readily with the orchestral texture, many orchestration books have recommended that orchestral accompaniments be assigned chiefly to the strings because of their unobtrusive character. However, this tactic is simply not borne out in the concerto literature, as we will see as we study the orchestration techniques used in existing concertos. By doing so we will be able to extrapolate much better guidelines for creating orchestral accompaniments in concertos.

In this section we will focus on six basic techniques:

1. using dialogue;
2. assigning foreground and background roles to solo and tutti sections;
3. exploiting color contrast to distinguish the soloist from the orchestra;
4. separating solo and tutti by rhythmic independence;
5. using sparse accompanimental textures advantageously;
6. using spacing and registral placement to distinguish the solo line from the orchestra.

Using Dialogue

The principle of solo-tutti dialogue stems directly from the Baroque concerto grosso. The composer introduces the solo instrument by itself, implanting its timbre firmly in the listener's mind, and then brings in the orchestra, effecting a radical shift in texture and timbre. In the following Beethoven piece the solo violin introduces the principal tune, which is immediately repeated by the orchestra. So conscious was Beethoven of the importance of the timbral contrast of the orchestral "answer" that he has the strings play pizzicato, in distinction to the soloist's legato. (Another famous example of such a beginning is Prokofiev's Violin Concerto in G minor.)

CD-6/TR. 1

EXAMPLE 16-1. Beethoven, *Romance for Violin and Orchestra*, Op. 40, mm. 1–8

The same principle operates in the following example from Schumann's piano concerto. The dialogue between soloist and orchestra enhances each participant's role, besides clarifying the melodic material and the formal structure of the double exposition.

EXAMPLE 16-2. Schumann, Piano Concerto, second movement, mm. 1–4

CD-6/TR. 2

Andantino grazioso (♪ = 120)

Fl.
B♭ Cl.
Bsn.
F Hn.
Pno. solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

There are literally hundreds of examples of this simple and effective accompanying technique. For instance, see also the first movement of this Schumann concerto, at measures 185–193.

Assigning Foreground and Background Material to Solo and Tutti Sections

It is interesting to note that in most successful concertos, roles are frequently exchanged, with the foreground material normally assigned to the soloist given to the orchestra, and the background material of the orchestra to the soloist. In one of the most striking concerto openings, from Tchaikovsky's Piano Concerto No. 1, the main theme is assigned to a combination of violins and cellos while the piano plays a chordal accompaniment, reinforced by soft, sustained harmonies in the winds.

CD-6/TR. 3

EXAMPLE 16-3. Tchaikovsky, Piano Concerto No. 1, first movement, mm. 1–17

Allegro non troppo e molto maestoso

Fl. 1
Fl. 2
Ob. 1, 2
B♭ Cl. 1, 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
Trb. 1, 2
Trb. 3
Timp.
Pno. solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ff p mf pizz.

When the soloist provides an accompaniment to the foreground activities of the orchestra, it is important to use the most idiomatic figuration for the solo instrument. When the solo instrument is the piano, for instance, an arpeggiated left-hand figure can be a very effective accompaniment.

In this next example the solo instrument fulfills the accompanist's role by playing virtuosic runs and other types of melodic and harmonic figurations.

CD-6/TR. 4

EXAMPLE 16-4. Saint-Saëns, Cello Concerto, mm. 447–462

453
2 Ob.
2 A Cl.
2 Bsn.
Vlc. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.
p
p
456
2 Ob.
2 A Cl.
2 Bsn.
Vlc. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.
1.

ADDITIONAL PASSAGES FOR STUDY

Brahms, Violin Concerto, first movement, mm. 110–131
Mendelssohn, Violin Concerto, first movement, mm. 335–343

Exploiting Color Contrast to Distinguish the Soloist from the Orchestra

To introduce the soloist, many composers utilize an orchestral color combination that contrasts distinctly with the solo instrument. For instance, the introductions to the slow movements of Tchaikovsky's violin concerto and Dvořák's cello concerto both begin with the woodwind choir. When in each of these movements the soloist enters some measures later, its color sounds very fresh—in spite of the fact that the string sound dominated the first movement.

EXAMPLE 16-5. Tchaikovsky, Violin Concerto, second movement, mm. 1–24

CD-6/TR. 5

CD-6/TR. 6

EXAMPLE 16-6. Dvořák, Cello Concerto, second movement, mm. 1–10

Examples from two Mozart concertos reveal other ways of using contrasting colors. In Example 16-7, from his Horn Concerto No. 2, the intermittent doubling of the solo instrument by the first violins does not diminish the soloist's role, because of the vast color contrast between the horn and violins. The rest of the strings for the most part provide the harmonic background, but occasionally offer contrapuntal interest. Notice that Mozart never uses the orchestral horns while the solo horn is playing, but rather employs them only in the orchestral introduction and during interludes.

EXAMPLE 16-7. Mozart, Horn Concerto No. 2, K. 417, first movement, mm. 6–63

CD-6/TR. 7

20

Ob.

E♭ Hn.

Vln. 1

Vln. 2

Vla.

Vlc., D.B.

f

25

E♭ Hn. solo

Vln. 1

Vln. 2

Vla.

Vlc., D.B.

p *f*

29

E♭ Hn. solo

Vln. 1

Vln. 2

Vla.

Vlc., D.B.

p

33

E♭ Hn. solo

Vln. 1

Vln. 2

Vla.

Vlc., D.B.

f *p*

38
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

42
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

47
Ob.
E♭ Hn.
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

53
Ob.
E♭ Hn.
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

57
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

60
E♭ Hn. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

The next excerpt, taken from the final movement of Mozart's Flute Concerto in G major, illustrates a number of ways he uses color to contrast the solo instrument with the rest of the orchestra.

1. He uses a sparse accompaniment of only strings, with two horns and two oboes at certain selected points, to provide a contrasting color to the flute's timbre.

2. He writes a tune twice, using two instrumental colors: the tune is played first by the oboes and starting at measure 65 then by the solo flute and first violins at measure 69. This passage is then followed by soloistic runs (measure 73), which can be played freely because of the lightly orchestrated accompanimental texture.
3. He drastically reduces the orchestral tutti as soon as the solo flute enters: in measure 83 the flute begins in the softest part of its range; therefore, to make its part heard Mozart reduces the forte orchestral tutti of measures 81–82 and lowers the dynamic to piano. The sustained D, played by horns, cellos, and basses, contrasts in color not only with the solo flute but also with the oboes and strings in these measures, thereby emphasizing the imminent return to the tonic G in measure 94.
4. He employs no other orchestral flutes in this work so that the solo flute will not encounter any color competition.

EXAMPLE 16-8. Mozart, Flute Concerto No. 1, K. 313, third movement, mm. 54–94

CD-6/TR. 8

66

2 Ob.
Fl. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

72

Fl. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

78

2 Ob.
2 G Hn.
Fl. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

f

83

2 Ob.
2 G Hn.
Fl. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

89

2 Ob.
2 G Hn.
Fl. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

Separating Solo and Tutti by Rhythmic Independence

This more delicate technique, crucial to many accompaniments, can be used in cases where solo and orchestral colors are similar. For instance, in his Violin Concerto, Tchaikovsky chose a string orchestra to accompany the solo violin. The composer gave the first violins a canonic countermelody and assigned a simple harmonic accompaniment to the rest of the section. This accompaniment neither duplicates nor imitates the distinct rhythm patterns played by the solo violin.

CD-6/TR. 9

EXAMPLE 16-9. Tchaikovsky, Violin Concerto, first movement, mm. 28–38

In the last movement of Mendelssohn's Violin Concerto in E minor, we find a radical difference between the rhythmically smooth line of the soloist and the rather "coquettish" figure of the orchestral string accompaniment.

EXAMPLE 16-10. Mendelssohn, Violin Concerto, third movement, mm. 107–117 CD-6/TR. 10

115

2 Fl.
2 A Cl.
2 Bsn.
Vln. solo
Vln. 1
Vln. 2
Vla.
Vlc., D.B.

p *p* *p*

pizz.

Using Sparse Accompanimental Textures Advantageously

An appropriate density of orchestral texture can add immeasurably to the effective presentation of solo material. In the following two examples, the solo instrument is given a sparse accompaniment texture that allows the opening melodic gestures of each solo instrument to come through.

In the first example Sibelius creates an atmosphere of hushed expectation, into which the soloist enters with a strong, fresh sound. Because the ethereal accompanying texture is so thinly orchestrated, the beautiful, robust melody soars freely above it and is instantly perceived by the listener.

CD-6/TR. 11

EXAMPLE 16-11. Sibelius, Violin Concerto, first movement, mm. 1–40

1

Allegro moderato

dolce ed espressivo

Vln. solo

mf

3

Vln. 1

con sord.

pp

con sord.

pp

Vln. 2

con sord.

pp

con sord.

pp

9
B♭ Cl. 1, 2
1. Solo
p espress.
Vln. solo
Vln. 1
Vln. 2

16
Vln. solo
cresc.
f
Vln. 1
poco cresc.
mp
Vln. 2
poco cresc.
mp

23
Vln. solo
dim.
sul G
poco f
più f
Vln. 1
Vln. 2
Vla.
con sord.
mp

Similarly, in this piano concerto Bartók creates a hushed atmosphere with the undulating strings, quietly pulsating timpani, and sustained clarinet chord, which permit the piano free rein in performing its lyrical tune. The fluttering, elusive, but yet quite regular background rhythm of the accompaniment contrasts strongly with the intricate rhythms of the solo piano's main melody.

EXAMPLE 16-12. Bartók, Piano Concerto No. 3, first movement, mm. 1–18

CD-6/TR. 12

Allegretto (♩ = 88)

1

A Cl. 1, 2 — p

Timp. — p

Pno. solo — mf

Vln. 2 — div. 6 6 6 — p

Vla. — div. 6 6 6 — p

4

A Cl. 1, 2

Pno. solo

Vln. 2

Vla.

Vlc. — pizz. — p

D.B. — pizz. — p

7

Fl. 1, 2 — p

A Cl. 1, 2 — p

Pno. solo

Vln. 2

Vla.

Vlc.

D.B.

9

Fl. 1, 2

A Cl. 1, 2

F Hn. 1, 2

p

Pno. solo

3

3

Vln. 2

Vla.

arco

pizz.

Vlc.

D.B.

11

Fl. 1, 2

A Cl. 1, 2

F Hn. 1, 2

Pno. solo

3

3

3

3

unis.

Vln. 2

p

unis.

Vla.

p

arco

Vlc.

p

arco

D.B.

p

Using Spacing and Registral Placement to Distinguish the Solo Line from the Orchestra

Some instruments tend to blend in with the orchestra when played in certain registers and with acoustically sympathetic orchestral combinations. To combat this tendency successfully, we can employ the ingenious solutions from the following three excerpts from the concerto literature.

In Beethoven's Violin Concerto, starting at measure 102, the soloist replaces the flute in the woodwind combination, and in this high, ethereal register it easily dominates the texture. The woodwinds provide a simple harmonic accompaniment, and the timpanist plays the rhythmic motive that joins the melody's two phrases.

CD-6/TR. 13

EXAMPLE 16-13. Beethoven, Violin Concerto, first movement, mm. 99–109

99 Allegro ma non troppo

2 Ob.

2 A Cl.

2 Bsn.

Timp.

Vln. solo

dolce

Vln. 1

Vln. 2

Vla.

Vlc. D.B.

104

cresc.

sf > *p*

Later on in this concerto the bassoon melody, played in the instrument's most expressive, intense register, is pitted against the virtuosic solo violin passages, making these two instruments equal partners. The great contrast in rhythmic activity between the two instruments, coupled with the simplicity of the harmonic accompaniment in the orchestral strings, contributes immensely to the clarity of the foreground (bassoon melody), middleground (violin figuration), and background (orchestral strings) roles these instruments play.

EXAMPLE 16-14. Beethoven, Violin Concerto, third movement, mm. 135–142

CD-6/TR. 14

Allegro

135

Bsn.

Vln. solo

Vln. 1

Vln. 2

Vla.

pizz.

Vlc. D.B.

139

Bsn.

Vln. solo

Vln. 1

Vln. 2

Vla.

arco

Vlc. D.B.

In the famous "triangle episode" from his Piano Concerto in E♭, Liszt writes an idiomatic flute part that doubles at pitch the piano's most important melody notes. The pizzicato strings provide a harmonic background on beats 1 and 2, and the triangle provides a new color on beat 3.

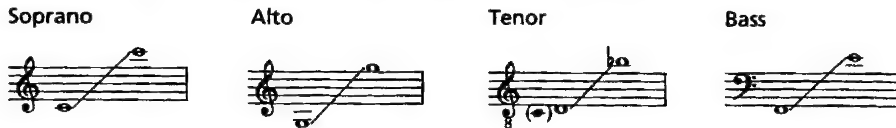
CD-6/TR. 15

EXAMPLE 16-15. Liszt, Piano Concerto No. 1, second movement, mm. 99–104

These techniques do not preclude the possibility of using a simple accompanying figure in the orchestra to harmonize a solo melody; in fact, especially with solo woodwind instruments, a simple accompaniment can often work very well. The accompanying forces should be kept registrally distant from the soloist whenever possible, however, although a highly contrasting rhythmic accompaniment lessens the need for this.

ACCOMPANYING THE VOCAL SOLOIST, ENSEMBLE, OR CHORUS

One of the earliest roles of the orchestra has been to provide accompaniment for vocal music, including solo works, vocal ensembles, and choruses. The accepted ranges of the four voice types used in these pieces are as follows:



Although these ranges generally define the outer limits of what most vocalists can sing, some singers' ranges are even greater. Some sopranos can go above high C (C^6) easily, and, using the chest voice, may reach a 4th below middle C. There are two categories of singers of the alto range: mezzo-sopranos, with a range of: and contraltos, with a range of: . Although different types of tenors are not placed in different categories, the quality of the voice easily separates a heavy Wagnerian tenor from a light, lyric tenor singing Mozart. The bass voice can be classified in at least two ways: the baritone, with a range of: and a "basso profundo," with a range of: . Some basses are able to reach a 4th below this lowest note.

Forcing the voice to sing over a thick orchestral accompaniment for long periods of time overtaxes and fatigues singers besides causing them to strain abnormally, all of which detracts from the beauty of the voice's natural quality. Just as with any orchestral instrument, the timbre and power of the vocal register will vary with each voice part; but unlike the orchestral instrument, these variations also differ with almost every individual. Usually the lower 5th within a given range carries least well and must be lightly accompanied; the next octave is relaxed and quite forceful; and the uppermost 5th within the range is the most powerful one. However, with many basses and contraltos, the lower part of the range carries much better than the upper portion, which can sound constricted and forced. Conversely, the upper registers of the sopranos and tenors are quite penetrating, whereas the lower register may speak only very softly.

The voice is an instrument that produces pitches purely "by ear," without the aid of strings, keys, or valves. Few singers have absolute pitch; others "feel" the placement of tones the way horn players do—with astonishing accuracy. But most vocalists depend on the accompaniment for their pitch orientation. Therefore, it is essential to lead a singer to his or her first pitch, and from then on provide aid with the orchestral accompaniment so that the singer will be able to maintain pitch accuracy with relative ease. This does not mean that the voice part should be doubled at pitch all the time, but the singer should have important points of pitch reference as frequently as possible. This is all the more true now, what with today's expanded harmonic vocabulary, and it is even more crucial when writing for a chorus, made up of singers less professionally trained than soloists.

The Recitative

The recitative is the simplest type of vocal piece to accompany; it usually consists of a few chords, necessary to establish and then sustain the harmonic background. The two most commonly used recitative types are that accompanied only by the continuo and that accompanied by an orchestra or smaller orchestral ensemble.

The first type is found mostly in the works of Bach, Handel, and other Baroque composers, and is notated simply as a vocal line with figured bass, on which chords are improvised (these are shown in Example 16-16 small noteheads):

CD-6/TR. 16

EXAMPLE 16-16. Haydn, *The Creation*, No. 9, "Und die himmlichen Heerscharen," mm. 1–4

ADDITIONAL PASSAGE FOR STUDY

J. S. Bach, Cantata No. 56, "Kreuzstab," "Mein Wandel auf der Welt," mm. 1–10

The second type of recitative accompaniment also consists mostly of simple block chords, but more of the orchestra is used, and often orchestral interruptions of the vocal part heighten the drama:

EXAMPLE 16-17. Mendelssohn, *Elijah*, "Call him louder," mm. 1–11

CD-6/TR. 17

Recit. 1

A Cl. — 1. — *fp*

Vln. 1, Vln. 2, Vla. — *fp* — *f*

ELIJAH

Bass solo: Call him loud-er! He hear-eth not. With knives and lan-cets cut your-selves af-ter your

Vlc., D.B. — *fp* — *f*

4 Allegro molto (♩ = 160)

Vln. 1, Vln. 2, Vla. — *f*

Bass solo: man-ner: Leap up-on the al - tar ye have made:

Vlc., D.B. — *f*

8

Vln. 1, Vln. 2, Vla. — *f*

Bass solo: Call him, and pro-phe-sy! Not a voice will an-swer you; none will list-en; none heed you.

Vlc., D.B. — *f*

CD-6/TR. 18

EXAMPLE 16-18. Walton, *Belshazzar's Feast,* Recitative, "And in that same hour," mm. 1–8

quasi recit.

G.P. 1

Baritone solo

And in that same hour as they feast - - - - - - - - - ed

Bar. solo

came forth fin-gers of a man's hand And the King saw the part of the hand that wrote

2 ♩ = 50

Bar. solo

And this was the writ-ing that was writ-ten:

lugubre

Orch.

ppp Cymb. Bs. Dr. Timp. Gong

sim.

4

Bar. solo

"Me-ne, me - ne, te - kel u-phar - - -

Orch.

7

Bar. solo

- sin."

Orch.

ADDITIONAL PASSAGE FOR STUDY

Mozart, *Le Nozze di Figaro*, Act III, Scene 4, "Hai già vinta la causa," mm. 14–40

The Opera Aria and Orchestral Song

The orchestral accompaniment to an operatic aria or orchestral song often sets the atmosphere and even provides interpretation of the text. This is especially true in opera. However, in many of the most successful Italian operas composers have opted for very simple accompanying figures to permit the singer to project the words and emotion, unencumbered by orchestral interference. The following excerpt from *La Traviata* exemplifies this type of treatment. The accompaniment is quite simple, containing an arpeggiated clarinet obbligato and sustained chords in the bassoons and horns.

EXAMPLE 16-19. Verdi, *La Traviata*, Act I, Scene 3, "Ah fors' è lui," mm. 29–44

CD-6/TR. 19

Andantino
C Cl.
Bsn.
F Hn.
VIOLETTA
con espansione
A quel - l'a - mor, quel - l'a - mor ch'è pal - pi - to del - l'u - ni -
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
pizz.

34

C Cl.
Bsn.
F Hn.
VIOLETTA
ver - so, del - l'u - ni - ver - so in te - ro, mi - ste - ri - o - so,
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

39

C Cl.
Bsn.
F Hn.
VIOLETTA
leggero
mi - ste-ri-o-so, al - te - ro, cro - ce, cro-ce e de - li - zia, cro-ce e de - li - zia, de-li-zia al cor.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ADDITIONAL PASSAGE FOR STUDY

Verdi, *La Traviata*, Act III, No. 10, "Parigi, o cara," mm. 1–35

In Micaela's aria from the third act of *Carmen*, the mellow color of the cello, horns, and low woodwinds contrasts wonderfully with the high vocal solo. Bizet is very careful also to keep the instruments and voice rhythmically separate. Thus, the singer is free to make her sad plea with great pathos. Only when she reaches her dramatic climax on the word *peur* does Bizet take the first violins up to double her at a higher octave.

EXAMPLE 16-20. Bizet, *Carmen*, Act III, No. 22, "Je dis que rien ne m'épouvante," mm. 6–24

CD-6/TR. 20

Andante molto ♩. = 44

Fl. 1
Fl. 2
Eng. Hn.
2 B♭ Cl.
2 E♭ Hn.
2 B♭ Hn.
Vln. 1
Vln. 2
MICAELA
Vlc.
D.B.

Je dis que rien ne m'é-pou-van-te, Je dis hé-

Fl. 1
Fl. 2
Eng. Hn.
2 B♭ Cl.
2 E♭ Hn.
2 B♭ Hn.
Vln. 1
Vln. 2
MICAELA
Vlc.
D.B.

las! que je ré-ponds de moi; Mais j'ai beau fai-re la vail-

12

Fl. 1
Fl. 2
Eng. Hn.
2 B♭ Cl.
2 E♭ Hn.
2 B♭ Hn.
1.
Vln. 1
Vln. 2
MICAELA
lan - te, Au fond du cœur je meurs d'ef - froi!
Vlc.
D.B.

15

Fl. 1
poco cresc.
Fl. 2
poco cresc.
Eng. Hn.
poco cresc.
2 B♭ Cl.
poco cresc.
2 E♭ Hn.
2.
poco cresc.
2 B♭ Hn.
Vln. 1
cresc.
Vln. 2
MICAELA
poco meno ***p***
cresc.
Seu - le en ce lieu sau - va - ge, Tou - te seu - le j'ai peur mais j'ai tort d'a - voir
Vlc.
poco cresc.
D.B.

18

Fl. 1 — poco sf dim. p dim.

Fl. 2 — poco sf dim. p dim.

Ob. — mf dim. p dim.

Eng. Hn. — mf dim.

2 B♭ Cl. — poco sf dim.

2 E♭ Hn. — 1. mf dim. p dim.

2 B♭ Hn. — p dim.

Trb. — ppp pp ppp

Timp. — pppp

Vln. 1 — unis. poco sf dim. p

Vln. 2 — unis. poco sf dim. p

Vla. — p

MICAELA — molto f

peur; Vous me don - ne-rez du cou - ra - ge, Vous me pro -

Vlc. — poco sf dim.

D.B.

The next example, from the orchestral song literature, consists of a short passage from the first song of Mahler's *Lieder eines fahrenden Gesellen*. Here the orchestra paints a picture of a meadow with flowers and birds chirping all about. The voice is never obscured in this colorful setting, however; although the voice is not doubled throughout, the singer's pitches can always be found somewhere in the orchestration, although the rhythms may not always coincide. See, for example, measures 46–47, where they are doubled first in the second violin, then in the viola, and so forth. You should study the entire song cycle for some of the most beautiful orchestral accompaniments imaginable.

EXAMPLE 16-21. Mahler, *Lieder eines fahrenden Gesellen*, No. 1, "Wenn mein Schatz," mm. 44–61

CD-6/TR. 21

44 Sanft bewegt
Dolce con moto

Fl.
Ob.
B♭ Cl.
F Hn.
Glsp.
Hp.
Voice
Vln. 1
Vln. 2
Vla.

(pp)
Blüm-lein blau! Blüm-lein blau! Ver - dor - re nicht, ver - dor - re nicht!

sempre pp

50
Fl.
Ob.
B♭ Cl.
Bs. Cl.
Bsn.
F Hn.
Glsp.
Trgl.
Hp.
Voice
Vög-lein süß! Vög-lein süß! Du singst auf grü - ner Hei - de!
Vln. 1 solo
Vln. 2, 3 solo
Vln. 1
Vln. 2
Vla.
Vlc.

56
Nicht schleppen
Senza ritardare
drängend im Tempo
accel.
accel.
Vorwärts
Avanti
Fl.
Ob.
B♭ Cl.
Bs. Cl.
Bsn.
F Hn.
Timp.
Glsp.
Trgl.
Hp.
Voice
Ach! Wie ist die Welt so schön! Zi - küth! Zi - küth!
stringendo in tempo
accel.
Vln. 1 solo
Vln. 2, 3 solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
div.
pizz.

ADDITIONAL ORCHESTRAL SONGS FOR STUDY

Barber, *Knoxville: Summer of 1915*
Berg, *Seven Early Songs; Altenberg Lieder*
Berlioz, *Les Nuits d'été*
Britten, *Serenade; Nocturne*
Chausson, *Poème de l'amour et de la mer*
Elgar, *Sea Pictures*
Mahler, *Kindertotenlieder; Das Lied von der Erde*
Messiaen, *Poèmes pour mi*
Ravel, *Shéhérazade*
Schoenberg, *Erwartung* (solo opera)
Wagner, *Wesendonk Lieder*

The Operatic Vocal Ensemble

The following quartet, a canon a 4 from the first act of Beethoven's *Fidelio,* is a brilliant example of vocal writing, simply and delicately accompanied by the orchestra. Notice that Beethoven doubles the voice parts at all times, either continuously or sporatically (doubling only some of their most important pitches) and keeps the texture around the singers extremely light. Study each doubling; often the bass part is doubled several octaves higher, or the soprano part by a bass instrument. The light orchestral figuration adds considerably to the spirit of contentment that at least three of the characters feel.

CD-6/TR. 22

EXAMPLE 16-22. Beethoven, *Fidelio,* Act I, No. 3, "Mir is so wunderbar" (Quartetto), mm. 1–51

16

Fl.
C Cl.
Vln. 2
Vla.
MARZ.
LEONORE
Vlc.

sempre p
pizz.

MARZ.: wer - de glück - lich, glück - lich sein! Mir ist so wun - der - bar, es engt das

LEONORE: Wie gross ist die Ge - fahr, wie schwach der Hoff - nung

20

Fl.
Vln. 2
Vla.
MARZ.
LEON.
Vlc.

cresc. mf p

MARZ.: Herz mir ein es engt das Herz mir ein; er liebt mich, es ist klar, ich wer-de glück - lich,

LEON.: Schein! Sie liebt mich, es ist klar, o na - men-, - na - men -

24

Fl.
Bsn.
G Hn. 1, 2
Vln. 1
Vln. 2
Vla.
MARZ.
LEON.
ROCCO
Vlc.
D.B.

pizz. arco p sfp

MARZ.: glück - lich sein! Mir ist so wun - der - bar, es engt das

LEON.: lo - se Pein! Wie gross, wie gross ist die Ge-fahr,

ROCCO: Sie liebt ihn, es ist klar, ja,

27

Fl.
C Cl.
Bsn.
G Hn. 1, 2
Vln. 1
Vln. 2
Vla.
MARZ. Herz, es engt das Herz mir ein; er liebt mich, es ist klar, ich wer-de
LEON. wie schwach, wie schwach der Hoff-nung Schein, wie schwach der Hoff-nung Schein! Sie
ROCCO Mäd-chen-er wird dein! Ein gu-tes jun-ges
Vlc.
D.B.

sfp *fp* *cresc.*

30

C Cl.
Bsn.
G Hn. 1, 2
Vln. 1
Vln. 2
Vla.
MARZ. glück-lich, ich wer-de glück-lich, ich wer-de glück-lich sein!
LEON. liebt mich, es ist klar, o na-men-, na-men-lo-se Pein!
JAQUINO Mir
ROCCO Paar, sie wer-den glück-lich, glück-lich sein!
Vlc. pizz.
D.B. pizz.

mf *p*

44

Fl.
C Cl. a 2 p
Bsn. p
G Hn. 1, 2
Vln. 1 p arco
Vln. 2 p arco
Vla. p

MARZ. sein! Mir wird so wun - der -

LEON. Schein. wie schwach der Hoff - nung

JAQ. ein! Mir sträubt sich schon das Haar, der Va - ter wil - ligt ein, mir wird so wun - der -

ROCCO dein! Ein gu - tes jun - ges

Vlc. D.B. p sempre p

46

Fl. p
C Cl. p
Bsn. p
G Hn. 1, 2
Vln. 1
Vln. 2
Vla.

MARZ. bar, ich wer - de glück - lich

LEON. Schein! O na - men - lo - se

JAQ. bar, mir sträubt sich schon das Haar, der Va - ter wil - ligt ein, mir wird so wun - der -

ROCCO Paar, sie wer - den glück - lich

Vlc. D.B.

Chorus

The combination of chorus and orchestra has been a favorite medium since the time of Monteverdi. Since choral singers are not always professional musicians, they often need more pitch support than solo singers. In the Baroque and Classical periods, the chorus, when not doubled, could discern the pitches easily from the clear harmony provided by the orchestra. As harmonic language grew more complex and orchestral forces became ever larger, composers found a variety of other ways to provide good pitch orientation for choruses.

The following Bach example, like other Baroque pieces, shows how the continuo provides the harmony for the singers at all times; here the orchestra is used to highlight some beginnings and endings of fugal phrases.

EXAMPLE 16-23. J. S. Bach, Cantata No. 21, "Ich hatte viel Bekümmerniss," opening chorus, mm. 1–12

CD-6/TR. 23

In "The Heavens Are Telling" from Haydn's *The Creation*, (Example 16-24), the entire chorus is doubled by the orchestra. In the second phrase notice that the flute no longer plays the soprano melody but instead doubles the tenor two octaves higher. Techniques like this add some variety to accompaniments.

EXAMPLE 16-24. Haydn, *The Creation*, No. 13, "Die Himmel erzählen," mm. 1–12

CD-6/TR. 24

Allegro

Fl. 1, 2 (a 2)

Ob. 1, 2 & C Cl. 1, 2

Bsn. 1, 2 (a 2)

C Hn.

C Tpt.

Alt. Trb. / Ten. Trb.

Bs. Trb. / Cbsn.

Timp.

Vln. 1

Vln. 2

Vla.

Soprano: Die Him - mel er - zäh - len die Eh - re Got - tes.

Alto: Die Him - mel er - zäh - len die Eh - re Got - tes.

Tenor: Die Him - mel er - zäh - len die Eh - re Got - tes.

Bass: Die Him - mel er - zäh - len die Eh - re Got - tes.

Vlc.

D.B.

7

Fl. 1, 2
Ob. 1, 2 & C Cl. 1, 2
Bsn. 1, 2
C Hn.
C Tpt.
Alt. Trb. Ten. Trb.
Bs. Trb. Cbsn.
Timp.
Vln. 1
Vln. 2
Vla.
Sop.
Alt.
Ten.
Bs.
Vlc.
D.B.

a 2

fz

Und sei-ner Hän-de Werk zeigt an das Fir-ma - ment,

Even though Orff employs a large orchestra in *Carmina burana*, (Example 16-25), he always ensures that the chorus sounds through the rich orchestral texture.

EXAMPLE 16-25. Orff, *Carmina burana*, "O Fortuna," mm. 1–14

CD-6/TR. 25

8
Ob. 1, 2
Eng. Hn.
Bsn. 1, 2
F Hn. 1, 3
F Hn. 2, 4
Timp.
Sop.
cres - cis; vi - ta de - te - sta - bi - lis nunc ob - du - rat
Alt.
Ten.
cres - cis; vi - ta de - te - sta - bi - lis nunc ob - du - rat
Bs.
Pno. 1
Pno. 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

The composer does so in three ways:

1. by often doubling the vocal lines by the orchestra (particularly in the opening measures of this excerpt);
2. by scoring all choral parts in their most advantageous ranges;
3. by setting up an accompanying figure (starting in measure 5) that does not obscure the chorus but gives vital pitch and rhythmic assistance.

We highly recommend that you study the scores of choral-orchestral works to discover the most successful techniques for accompanying solo and orchestral passages. Below is a short list of recommended works. Of course, there are many operatic chorus and orchestra combinations, from *Fidelio*, *Der Freischütz*, *Carmen*, *Otello*, *Turandot*, and in particular, *Boris Godunov* and *Wozzeck*, among other operas.

ADDITIONAL WORKS FOR STUDY

J. S. Bach, Mass in B minor; *St. Matthew Passion*
Bartók, *Cantata profana*
Beethoven, *Missa solemnis;* Mass in C
Berlioz, Requiem
Berio, *Sinfonia*
Brahms, *A German Requiem; Alto Rhapsody*
Britten, *War Requiem*
Debussy, *The Martyrdom of St. Sebastian*
Handel, *Messiah; Israel in Egypt*
Haydn, *The Creation; The Seasons;* and Masses
Hindemith, *When Lilacs Last in the Door-yard Bloom'd*
Honegger, *King David*
Kodály, *Psalmus hungaricus*
Mahler, Symphony No. 2
Mendelssohn, *Elijah; Hymn of Praise*
Mozart, Requiem; Mass in C minor
Poulenc, *Gloria*
Prokofiev, *Alexander Nevsky*
Schoenberg, *Gurrelieder*
Sessions, *When Lilacs Last in the Dooryard Bloom'd*
Stravinsky, *Symphony of Psalms; Canticum Sacrum; Threni; Oedipus Rex*
Tippett, *A Child of Our Time*
Vaughan Williams, *Flos Campi; Hodie*
Verdi, Requiem
Walton, *Te Deum; Belshazzar's Feast*

17

TRANSCRIBING FOR ORCHESTRA

Transcribing of a piece of music from one medium to another is very much like translating a poem from one language to another. Although speakers of the original language will invariably claim that a poem can never be translated successfully and loses its essence in the process, people who do not speak the original tongue will benefit by being able to understand something that was beyond their grasp before the transformation was accomplished. In some cases great poets of one language undertake to translate poems from another, and in doing so create magnificent masterpieces.

In music as well as in poetry, the arguments for and against transcription have been with us for many years. Whereas purists maintain that no one should tamper with the music of the past, history answers with very strong reminders that transcription is perhaps as old as composed music itself.

We need only go back as far as the Baroque period to find evidence that composers of that time repeatedly transcribed their own pieces several times over, besides adapting the works of their contemporaries and predecessors. In fact, it was a common practice in this period to reorchestrate a piece for whatever instruments were available.* To cite only a few of the overwhelming wealth of examples: Bach's versions of the violin concertos of Vivaldi; Bach's adaptations of movements from his own instrumental music as orchestral *sinfonias* for some of the cantatas, or his transcriptions of his violin concertos into keyboard concertos (the E major violin concerto became the D major keyboard concerto); Handel's transcription of the second movement of his own D major violin sonata as a piece for chorus and orchestra in his oratorio *Solomon*. The practice grew with each successive decade (Beethoven even made a transcription of his violin concerto for piano and orchestra) until it reached almost epidemic proportions in the nineteenth century, when every greatly admired work was transcribed for piano two hands, piano four hands, two pianos, violin and piano, and so on. These transcriptions were considered a wonderful way for amateur musicians to become familiar with the masterworks in the privacy of their own homes. Liszt transcribed all the symphonies of Beethoven for piano; Brahms, Dvořák, and Grieg transcribed their own ethnic dances (Hungarian, Slovakian, Norwegian) from piano four hands to orchestra. It is hardly neces-

*Baroque composers were not so exacting as modern composers about which instrumental timbre should sound in a piece at any particular time. Instead, in their works they sometimes did not specify which exact instrument would perform a given part but rather gave the general indication that it could be played on, say, "any C instrument."

sary to justify the art of transcription today, since a large portion of works in the standard orchestral repertoire are transcriptions of original piano pieces. Liszt's *Hungarian Rhapsodies*, Bizet's *Jeux d'Enfants* ("Children's Games"), and almost all the works of Ravel bear witness to this statement.

The claim can be made that a famous work like Musorgsky's *Pictures at an Exhibition* is more effective in Ravel's orchestral transcription than in the original piano version, or that Husa's *Music for Prague* sounds better for orchestra than for band; or conversely, that Schoenberg's Variations, Op. 43 sound better for band than for orchestra. Although we certainly do not wish to get embroiled in any of these controversies, we do wish to say that the art of transcription is a valid and respectable one and should be carefully mastered.

Before we examine the practical aspects of this skill we will clarify the difference between transcription and arrangement. Transcription is a lateral transference of a previously composed work from one musical medium to another. Arranging involves more of the compositional process, since the previously existing material may be as little as a melody—or even a partial melody—for which the arranger will supply the harmony, counterpoint, and sometimes a unique rhythmic setting before even thinking about the orchestration. When an arrangement is called for, you should adopt the same procedures for orchestrating a transcription that we give below once the tune has been harmonized and arranged fully in a piano or short score.

To master the art of transcription, you need to have:

1. a thorough knowledge of all the instruments (their capabilities and the characteristics of different parts of their range) used in the piece you wish to transcribe as well as in the transcription you wish to make;
2. an intimate knowledge of the piece's structure, including its formal details;
3. an insight into the orchestral style of the composer whose work is to be transcribed, or if that composer has not written for orchestra, familiarity with the orchestral practices of the era in which the composer lived;
4. a love for the work to be transcribed;
5. a valid reason to transcribe a particular work.

For this last point there can be many reasons: the work cries out for an orchestral transcription; the original composer wished to orchestrate the work but was never able to accomplish this task; a conductor wishes to perform the work with a particular orchestral medium; or certain instruments for which the work was originally scored are not available.

The overriding consideration that must guide the transcriber is taste. We must respect the work, the composer, and the period in which the piece was conceived, but we must use our best judgment as we make every decision concerning the music to be transcribed. For instance, we need to take into account the size and composition of the orchestra we wish to use; the suitability of an instrument to present a certain phrase; and the appropriateness of our orchestration in clarifying the form of the composition.

In this chapter we shall address many of the issues surrounding transcriptions for orchestra from another medium. In Chapter 19 we will treat the task of transcribing for band or wind ensemble. In the workbook we give a variety of pieces that you can use for practice. We will focus on three main areas:

1. transcribing from keyboard or small chamber combinations to orchestra;

2. transcribing from band or wind ensemble to orchestra;
3. transcribing to various instrumental combinations that happen to be available at a given time.

This last section can be applied to those situations in which we might be called on to transcribe orchestral works for performance by groups, especially school ensembles, that do not have the full complement of orchestral instruments demanded by a particular score, or comprise musicians with limited skills. These ensembles often perform the important and necessary task of exposing young players and audiences to good music, and our task of orchestrating expressly for them can be richly rewarding.

TRANSCRIBING FROM KEYBOARD OR SMALL CHAMBER COMBINATIONS TO ORCHESTRA

Transcribing from Keyboard to Orchestra

Transcribing from keyboard to orchestra is the most common type of medium change. Although it is impossible for an orchestra to simulate the piano sound, some amazing transcriptions from keyboard to orchestra have been made in the last one hundred years or so. Ravel wrote all but three of his brilliant orchestral works for piano first; Stravinsky wrote his early ballets initially for piano—but perhaps for the purely practical reason that a rehearsal version was essential. If judiciously executed, transcriptions from piano to orchestra can produce very idiomatic orchestral music.

These are some ways to accomplish this task:

1. Do not try to simulate the piano; instead, change piano idioms to orchestral ones while retaining the spirit of the music.

   Here are two examples of how Ravel transcribed his own piano pieces. In the first, notice the thickening of the texture in the orchestral version, which creates a lusher orchestral tutti. In the second, notice that Ravel did not feel compelled to transcribe the piano version's left-hand "melody" into the orchestral version; the instrumental colors of the latter take care of the contrast.

EXAMPLE 17-1. Ravel, *Ma mère l'oye* (1908–1910), "Le jardin féerique," mm. 20–23

a. PIANO VERSION

Lent et grave (♩ = 56)

20

Pno.

8va

b. ORCHESTRAL REDUCTION

EXAMPLE 17-2. Ravel, *Menuet antique* (1895), mm. 64–66

a. PIANO VERSION

b. ORCHESTRAL REDUCTION

2. Remember that the piano is played by one person, while the orchestra is an aggregate of many; problems that never interfere with the performance of the pianist may crop up in an orchestral transcription. For instance, your transcription might need a rhythmic simplification, an alteration in notation, or a metric change to maintain clarity in the orchestral version. To give an example, a rebarred version of this Bartók piece would be easier for an orchestra to play, since the conductor could give more downbeats.

EXAMPLE 17-3. Bartók, *Mikrokosmos*, No. 5, "Syncopation," mm. 1–3

a. ORIGINAL PIANO NOTATION

1 Allegro (♩ = 152)

Pno.

mf pesante

sf

f

sff

b. REBARRED VERSION FOR ORCHESTRA

1 Allegro

Orch.

mf

etc.

3. A crescendo, diminuendo, rubato, or even a fermata is made clearer when actually written into the musical texture of an orchestral score. For instance, you can create a crescendo simply by adding instruments, or a diminuendo by reducing the number of instruments playing. In the following example, Mahler effects a diminuendo by dropping out the violas and cellos and letting the bass clarinet, flutes, and double basses conclude the passage.

CD-5/TR. 65

EXAMPLE 17-4. Mahler, *Lieder eines fahrenden Gesellen*, No. 1, "Wenn mein Schatz," mm. 89–96

89 Schneller

Fl.

Ob.

Cl.

Bs. Cl.

Timp.

Trgl.

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

dim.

Flag.

IV str.

pizz.

pppp

Here are two additional examples of written-out effects by other composers:

EXAMPLE 17-5. Beethoven, Symphony No. 6, first movement, mm. 305–312

CD-5/TR. 66

Allegro moderato

305

Fl. Ob. B♭ Cl. Bsn. F Hn. Vln. 1 Vln. 2 Vla. Vlc. D.B.

pp p cresc. cresc. ff

EXAMPLE 17-6. Bizet, *Jeux d'enfants*, "La toupie," mm. 1–5*

CD-5/TR. 67

Allegro vivo

1

Vln. 1 Vln. 2 Vla. Vlc. D.B.

ff dim. pizz. p pp

*See Example 17-11b, p. 691, for the entire movement.

4. We must correctly interpret important piano notations to render the transcription faithful to the composer's intentions. For instance, for *una corda* pedalings in the piano score, for which the piano's soft pedal is used to shift the inside action so that the hammers strike only one or two of the three strings, we might want to mute the orchestral instruments used in the transcribed passage.
5. You should be thoroughly familiar with the music to be transcribed so that you can compose out all implied harmonies and melodic lines in the original piano version more fully in the orchestral transcription. You must study carefully the layers of linear activity so that you can more fully orchestrate in the transcription the inner- and outer-voiced thematic material that may be only outlined in the original piano music. In addition, you must recognize the idiomatic piano writing necessitated by the physical limitations of a single pianist. You might set chords that are arpeggiated in the piano version because of the limited span of the human hand as block chords for orchestra, which could easily play them that way.
6. When a contrapuntal piano work is to be orchestrated, the limitless color possibilities of an orchestra are tantalizing. A pianist, however gifted, can apply only a relatively limited coloration to the individual lines of a contrapuntal work, no matter how clever and varied his or her articulations. In contrast, the orchestrator has a variety of colors to work with and can easily feature the various lines. However, you should not make things so colorful as to obscure the form or upset the musical scheme—such as, changing instrumental color in the middle of a melodic phrase or fugue subject, unless the musical texture itself is pointillistic or some contemporary melodic device is used. Studying the layers of the music and determining their order of importance is paramount to transcribing successfully, whether the piece is largely homophonic or largely polyphonic.

Here are two examples that deal orchestrally with the pianistic phenomena mentioned in all six points given above. In the first, the bass pitches that are sustained by the damper pedal in the piano version are written out as dotted quarter notes in the orchestral version. The woodwinds, doubled at the octave both above and below, give a fuller, more colorful sound to the crescendo.

EXAMPLE 17-7. Chopin, Etude, Op. 25, No. 6, mm. 39–40

a. ORIGINAL PIANO VERSION

39 Andante

Pno. [mf] [f]

b. ORCHESTRAL VERSION

CD-5/TR. 68

In the second excerpt, Ravel has written out the fermatas in Musorgsky's original piano version by giving each chord in his version four beats in $\frac{2}{2}$ meter, which approximates the decay time of each piano chord with fermata. Musorgsky strengthened the chords starting seven measures from the end by having the pianist play each chord twice, in different octaves; at this same spot (nine measures before the end in the orchestral version) Ravel, who does not need to concern himself with natural decay, writes very powerful, long-held chords for the winds and strings. Notice also that Ravel does not mimic the final piano tremolo in his orchestral version; nor does he end the piece on a fermata.

EXAMPLE 17-8. Musorgsky, *Pictures at an Exhibition,* "The Great Gate of Kiev"

a. ORIGINAL PIANO VERSION, FINAL 15 MEASURES

CD-5/TR. 69

b. ORCHESTRAL VERSION BY RAVEL, FINAL 22 MEASURES

122

1, 2, 3. a 3

Fl. 1, 2, 3
Ob. 1, 2, 3
B♭ Cl. 1, 2
Bs. Cl.
Bsn. 1, 2
Cbsn.
Hn. 1, 2
Hn. 3, 4
Tpt.
Trb. 1, 2
Trb. 3 Tba.
Timp.
Trgl.
Cymb.
Bs. Dr.
Tam-Tam
Chm.
Hp. 1, 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

avec baguette

Successful Models from Music Literature

The best way to learn how to make transcriptions from piano to orchestra is to study the successful transcriptions made by other composers. The examples given in this section, most of which are simple and straightforward, were done by the composers themselves.

Brahms, Hungarian Dance No. 1

Brahms created an effective transcription of his original piano four-hand version of the Hungarian Dance No. 1. He increases the dynamics from mezzo forte to forte in the opening string passage of the orchestral version, taken from the piano version's *secondo* part, and from piano to forte at the entrance of the winds in measure 5, taken from the piano version's *primo* part. These dynamic changes add some intensity to the orchestral version. The beautiful scoring of the strings, with the violins playing the tune (doubled an octave lower by the bassoons), is enhanced by the steady pizzicato bass (not in the original piano version) and the cello, the latter which gives the Hungarian rhythm (in measures 5–6 the violas join the cellos to articulate this off-the-beat rhythm). The cello, which distributes the chord tones over the course of each measure in measures 1–4, provides the complete chordal harmony on the downbeats of measures 5–6, using double stops joined by those of the viola. Thus, the strings in measures 1–4 and later in measures 7–10 give a sense of lightness, whereas in the intervening measures 5–6 they sound weightier and more stable, the better to underpin the woodwinds' arpeggiated figuration.

The woodwind arpeggio is most imaginatively scored: while the piccolo and first flute play up, the two clarinets "flutter" in the opposite direction. The composer entrusts the staccato pitches to the second flute and first bassoon, doubled at the octave in measure 6 (note that the bassoon completes the descending arpeggio on B♭ but the flute does not, since it cannot; note also that the bassoon's ascending arpeggio in measure 5 is not in the piano version). In the parallel passage in measure 12 the bassoon instead reinforces the pitches of the first flute. In measure 5 the horns, with the timpani and triangle, add color to the sustained note of the violins besides reinforcing the harmony.

We quote this piece at length to show how long Brahms retains the same color combination. You might trace the interchange between the flutes and the bassoon through measure 24. When Brahms finally does change the orchestral color in measure 25, he gives the triplets of the piano version's *secondo* part to the violas and orchestrates the mezzo forte of the piano version's *primo* part by doubling the violins with the horns and oboes.

EXAMPLE 17-9. Brahms, Hungarian Dance No. 1, mm. 1–48

a. PIANO FOUR-HAND VERSION

SECONDO

Allegro molto

mf espress.

p

trem.

PRIMO

Allegro molto

p legg.

mf espress.

sfp legg.

mf

sfp

CD-5/TR. 70

b. ORCHESTRAL VERSION

Allegro molto

Picc.
Fl.
B♭ Cl.
Bsn.
C Hn. 1, 2
E♭ Hn. 3, 4
Timp.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

espress.

espress. e vibrato

pizz.

17

Picc.
Fl.
B♭ Cl.
Bsn.
C Hn. 1, 2
E♭ Hn. 3, 4
Timp.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

25

Picc.
Fl.
Ob.
B♭ Cl.
Bsn.
C Hn. 1, 2
D Tpt.
Timp.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

espress.
cresc.
div.
pizz.
marcato
arco

33
Picc.
Fl.
Ob.
B♭ Cl.
Bsn.
C Hn. 1, 2
D Tpt.
Timp.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
pizz.
arco
f ed animato

Dvořák, Slavonic Dance No. 8

Dvořák's orchestral transcription of his Slavonic Dance No. 8 for piano four hands is known for its thrilling tutti opening and the contrasting softer section immediately following. The grace notes of the second violin and the rolled chord of the cello, both of which include open strings, give a special ring to the orchestral version's opening chord. In the first few measures, compare the first and second violin parts with those of the first oboe and second clarinet; at two-measure intervals the two woodwinds alternate from doubling the harmony notes of the second violin to doubling the melody notes of the first violin. Notice, too, how Dvořák emphasizes the melodic figure by a large amount of doubling (piccolo, flute, and first violin, as well as first oboe and second clarinet in measures 3–4). The cymbal and bass drum supply this well-orchestrated tutti with additional color. At measure 9 the orchestration changes: the dynamic drops to piano, and the opening, peasantlike, syncopated melody is given exclusively to the woodwinds, which repeat it piano. A new, sustained countermelody, added by the upper strings, emphasizes the offbeats of the Slavonic rhythm (this countermelody does not exist in the orginal piano parts). Here, a light accompaniment is supplied by the horns, lower winds, and lower strings.

EXAMPLE 17-10. Dvořák, Slavonic Dance No. 8, mm. 1–48

a. PIANO FOUR-HAND VERSION

SECONDO

Presto

PRIMO

Presto

b. ORCHESTRAL VERSION

CD-5/TR. 71

Presto

1

Picc.
Fl.
Ob. 1, 2
B♭ Cl. 1, 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
Trb. 1, 2
Trb. 3
Timp.
Cymb. Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ff

9

Picc.
p

Fl.
p

Ob. 1, 2
p

B♭ Cl. 1, 2
p

Bsn. 1, 2
p

F Hn. 1, 2
p

F Hn. 3, 4
p

Trgl.
p

Vln. 1
Sul G
p espress.

Vln. 2
Sul G
p espress.

Vla.
p espress.

Vlc.
pizz.

D.B.

17
Picc.
Fl.
Ob. 1, 2
B♭ Cl. 1, 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
Trb. 1, 2
Trb. 3
Timp.
Cymb.
Bs. Dr.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
ff
arco

25

Picc.
Fl.
Ob. 1, 2
B♭ Cl. 1, 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p
a 2
pp
pizz.

33

Picc.
Fl.
Ob. 1, 2
B♭ Cl. 1, 2
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
F Tpt. 1, 2
Trb. 1, 2
Trb. 3
Cymb. Bs. Dr.
Trgl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

The distribution of chord tones in the repetition of the first strain at measure 17 has more open spacing, particularly in the horns and middle string parts. Thus, without changing the basic color, Dvořák has given the tutti a slightly different hue. The new answer to this strain (measure 25) is expertly worked out in the orchestral version: the delay of the oboe entrance mimics the delay of the tune's entrance in the left hand of the *primo* piano part; the new orchestral color in measure 29 emphasizes the polyphonic nature of this answer. At measures 33–35 in the orchestral version Dvořák achieves a diminuendo from *fortissimo* to piano by dropping out many of the doubling instruments; the elimination of the strings, which have been playing continuously since the beginning of the piece, is a great relief here (perhaps Dvořák cut them out to prepare for their supporting role in the next section, starting at measure 41). Notice also that the piccolo part has been written an octave lower; this enables the player to lower the dynamic to piano more easily. The other instruments in measures 34 and following (flutes, oboes, clarinets, horns, and trombones) also play in a range in which the performers can better control dynamics.

Bizet, *Jeux d'enfants*, "La toupie"

The *Jeux d'enfants* of Bizet is another work originally written for piano four hands. Its transcription for orchestra is simple but sensitive, full of many valuable devices that can be adopted by other transcribers. In "La toupie," given here in its entirety, the opening octaves are distributed among the strings in a way that allows a diminuendo as the string parts drop out in measures 2–5. In measures 5–8 the E pedal is strengthened by a playful orchestration that gives the third horn its own rhythm; the horn plays on beat 2, which is not emphasized in the piano version's *primo* part or in the orchestral version's flute part. Starting in measure 9 this rhythm provides a light offbeat accent. In measure 7 notice that Bizet enharmonically spells the *secondo* piano part's D♯^{3} as E♭^{3} in the orchestral version. Starting in measure 16 Bizet orchestrates a crescendo by adding more instruments. To the sustained chord of the piano version in measure 28 he adds in the orchestral version a "whispering" tritone in the cellos and a timpani roll. To accommodate all this extra motion that enlivens this sustained chord, Bizet changes the dynamic from **pp** to **ppp**. The triplet run in the strings that follows (measure 31) is an excellent example of the dovetailing of parts to give a continuous feel to the motion that goes from bottom to top.

Bizet makes slight but significant changes in his orchestration of the repetition of this little piece, which begins in measure 37. For instance, notice that the viola's sixteenth notes are doubled by the cellos for the duration of the entire section (measures 31–63) and that the staccato flute melody is doubled at pitch by pizzicato violins from measure 40 on. Notice also that the descending chromatic scale in the clarinets in measures 38–41 is doubled at the octave by the bassoons (in the original piano version this line is represented by simple staccato notes given in the left hand *secondo* part). All these doublings create a fuller orchestral texture than was heard from measures 1 to 27. The fourth horn reinforces the pedal by sustaining the pitch E, while the trumpets play the rhythm previously given to the third horn. Ten measures before the end Bizet repeats the "whispering" tritone in the cellos as well as the timpani roll, but this time the dovetailing triplet run that follows is heard in the woodwinds. The ending is scored quite traditionally, with effective use of spacing and octave doublings within the final chords. Notice that as the strings play the sixteenth-note pattern in octaves, the third and fourth horns sustain an E pedal, mimicing the piano's sustaining pedal. The high woodwinds, which double the strings at the octave on the last two chords, provide a more colorful finality to the piece than the two pianists playing the original version could muster.

EXAMPLE 17-11. Bizet, *Jeux d'enfants*, "La toupie" (complete)

a. PIANO FOUR-HAND VERSION

55

smor - - - - zan - - - - do

59

64

69

b. ORCHESTRAL VERSION

CD-5/TR. 72

Allegro vivo (♩ = 152)

Fl. 1

Fl. 2

2 Ob.

2 A Cl.

2 Bsn.

F Hn. 1, 2

C Hn. 3, 4

A Tpt. 1, 2

Timp.

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

ff p dim. pp pizz.

8

Fl. 1
Fl. 2
2 Ob.
2 A Cl.
2 Bsn.
F Hn. 1, 2
C Hn. 3, 4
Vla.
Vlc.
D.B.

pp pp pp pp pp pizz. pp

14

Fl. 1
Fl. 2
2 Ob.
2 A Cl.
2 Bsn.
F Hn. 1, 2
C Hn. 3, 4
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p p p p p pizz. p pizz. div. p

20

Fl. 1 — *p* — *più p* — *sempre dim.*

Fl. 2 — *p* — *più p* — *sempre dim.*

2 Ob. — *p* — *pp*

2 A Cl. — *p* — *più p* — *sempre dim.*

2 Bsn. — *p* — *pp* — *sempre dim.*

F Hn. 1, 2

C Hn. 3, 4

Vln. 1

Vln. 2

Vla. — *p* — *più p* — *sempre dim.*

Vlc. — *p* — *più p* — *sempre dim.*

D.B. — *p* — *più p* — *sempre dim.*

27

Fl. 1
Fl. 2
2 Ob.
2 A Cl.
2 Bsn.
F Hn. 1, 2
C Hn. 3, 4
A Tpt. 1, 2
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ppp
arco
unis.
mf
dim.
pp

35

Fl. 1 — *ff* — *p*

Fl. 2 — *ff* — *p*

2 Ob. — *ff*

2 A Cl. — *ff* — a 2 *f* *dim.* — *pp*

2 Bsn. — *ff* — a 2 *f* *dim. molto* — *pp*

F Hn. 1, 2 — *ff*

C Hn. 3, 4 — *ff ff dim.* — *p dim.* — *pp*

A Tpt. 1, 2 — *ff* — *pp*

Timp. — *ff*

Vln. 1 — *pp* 3 3 3 — *ff ff* *dim.* — pizz. *p*

Vln. 2 — 3 — *ff ff* *dim.* — pizz. *p*

Vla. — *ff ff* *dim.* - - - - - - *molto* - - - - - - *pp*

Vlc. — *ff ff* *dim.* - - - - - - *molto* - - - - - - *pp*

D.B. — *ff* — pizz. *pp*

42

Fl. 1
Fl. 2
C Hn. 3, 4
A Tpt. 1, 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

pp
pp

49

Fl. 1
Fl. 2
2 Ob.
2 A Cl.
2 Bsn.
F Hn. 1, 2
C Hn. 3, 4
A Tpt. 1, 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

p *p* *pp* *p* *p* *pp* *p* *pp* *pp* *pp*

div.

55

Fl. 1
Fl. 2
2 Ob.
2 A Cl.
2 Bsn.
F Hn. 1, 2
C Hn. 3, 4
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ppp p più p pp dim. div.

61
Fl. 1
dim. - - - - - - mol - - - - - - to
ppp
Fl. 2
dim. - - - - - - mol - - - - - - to
ppp
2 Ob.
ppp
2 A Cl.
dim. - - - - - - mol - - - - - - to
ppp
3
pp
2 Bsn.
ppp
pp
F Hn. 1, 2
- - - - molto
ppp
C Hn. 3, 4
- - - - molto
ppp
A Tpt. 1, 2
ppp
Timp.
ppp
arco
Vln. 1
ppp
unis.
arco
Vln. 2
ppp
Vla.
- - - - - - molto
ppp
Vlc.
- - - - - - molto
mf
dim.
unis.
arco
D.B.
ppp

Ravel, *Ma mère l'oye*, "Petit poucet"

It is hard to believe that the suite *Ma mère l'oye* was first written for piano four hands; its orchestral version sounds so completely natural. For "Petit poucet," the second piece, Ravel's orchestration adapts the piano original simply, but with impeccable taste and clarity. The muted violins, providing a soft background, contrast sharply with the oboe's tune. Since eighth-note movement dominates both accompaniment and melody, the highly contrasting instrumental colors separate the two elements for the listener. In the orchestra version,

Ravel is especially careful to notate even the slightest details of articulation as well as the decay and cutoff of a pitch. For instance, the very sustained effect notated in the *secondo* piano part by an unbroken slur is created in the orchestral version by an instrumental background that dovetails with another—for instance, at measure 12 the violins' lines dovetail with those of the lower strings. Here, the slurring pattern of the violas and cello, like that of the violins heard earlier, creates a fairly light and regularly articulated string accompaniment that supports the more imaginative phrasing of the solo instrument. Notice that the melody itself, taken up by the darker-hued English horn, is given a fresh articulation in measure 12. The sustained E♭ of the clarinet in these measures, softly accented by the double bass pizzicato, creates an effect comparable to that produced by the damper pedal on the piano (compare the two versions of the piece at measure 14). It is interesting to observe how the composer changes both foreground and background color with each new entrance of the melody and how the background at times dovetails with the old, whereas at other times it is newly articulated.

At measure 27, we begin an orchestrated crescendo, followed by a diminuendo. The harmonic texture is very thin, consisting mostly of octave doublings, but because of the intense register that most of the instruments play in, their colors give an effect of fullness. As the lines descend and drop out, Ravel brings back the English horn theme a 5th lower than its first statement (measure 40).

The four measures starting at measure 51 go well beyond mere transcription. Over a D pedal and with the melody played by the first bassoon, paralleled by the muted violas, Ravel creates a magical atmosphere. The sophisticated, subtle orchestral effects in these measures could never be duplicated on the piano unless the insides of the piano were called into use. The simple grace note ($G\sharp^7$–A^7) in the piano version's *primo* part is replaced by a chromatic glissando in string harmonics, from $F\sharp^7$ to A^7, in the solo first violin. Ravel uses this device in many of his transcriptions from piano to orchestra, varying and extending an ornament such as a grace note with a more coloristic effect. The *sul tasto* glissando in the rest of the first violins and later in the cellos, as well as the trills in the second and third solo violins and the tremolo in the second violins, add mystery and a moment of otherworldliness to the musically conservative atmosphere thus far. Study the piccolo's motive, which is imitated by the second and third solo violin trills; this is quite different from the simple gesture given in the piano version's *primo* part. The seemingly unaffected bassoon solo, with its viola accompaniment, is the only constant factor here, and in measure 55 this melody eases the return of the more typical orchestration of the piece's beginning, albeit differently colored. The only reminder that Ravel gives of the strange interlude in measures 51–54 occurs nine measures before the end, when the cellos play a harmonic, resulting in a chord that is similarly colored. The combination of solo cello and piccolo at measure 60 is a wonderful coloristic touch; the hollow-sounding piccolo in these measures presents a striking contrast to the very quiet solo flute line that follows, which descends into its rich but breathy, mid to lower register. The return of the exact opening colors in the last five measures is a clever stroke, aided by the harmonics in the beautiful viola chord.

EXAMPLE 17-12. Ravel, *Ma mère l'oye,* "Petit poucet" (complete)

a. PIANO FOUR-HAND VERSION

SECONDO

Très modéré (♩ = 66)

pp

mf

pp

f

très expressif

p

mf

en dehors et expressif

pp

PRIMO

Très modéré (♩ = 66)

pp un peu en dehors et bien expressif

p

mf

pp

f très expressif

p

mf

pp

56

la m.g. expressive

Un peu retenu

CD-5/TR. 73

b. ORCHESTRAL VERSION

Très modéré (♩ = 66)

Ob. Solo *pp expressif*

Vln. 1 Sourdines *pp*

Vln. 2 Sourdines *pp*

Ob.

Eng. Hn. *p expressif*

Vln. 1

Vln. 2

Vla. Sourdines *p*

Vlc. Sourdines *p*

14

Eng. Hn.

B♭ Cl. 1. *p* *p*

Vla. *mf*

Vlc. *mf*

Sourdines pizz.

D.B. *p*

22

Fl. 1. Solo *pp*

Eng. Hn.

B♭ Cl. 1. Solo *pp*

2 F Hn. Sourdines *pp*

Vln. 1 *pp*

Vln. 2 *pp* *pp*

Vla. *pp* *pp*

Vlc. *pp* *pp*

D.B. arco *pp*

28
Fl.
Ob.
Eng. Hn.
B♭ Cl.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
mf
f très expressif
f très expressif
f très expressif
p
f très expressif
p
f très expressif
f
f
f très expressif
36
Fl.
Ob.
Eng. Hn.
B♭ Cl.
Bsn.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
p expressif
pp
1.
p
pp
pp
p
p
pizz.
p

44
Eng. Hn.
Bsn.
Vla.
Vlc.
D.B.
3
p
mf

51
Picc.
Fl.
B♭ Cl.
Bsn.
2 F Hn.
Vln. 1 solo
Vln. 2 solo
Vln. 3 solo
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.
1.
Solo
expressif
gliss.
sans Sourdine
sur la touche
arco
pp
p
mf

54

Picc.
Fl.
Ob.
Eng. Hn.
B♭ Cl.
Bsn.
2 F Hn.
Vln. 2 solo
Vln. 3 solo
Vln. 1
Vln. 2
Vla.
Vlc. solo
Vlc.
D.B.

Unis.
jeu ord.
jeu ord.
jeu ord.
sur la touche
gliss.
sur la touche
pp expressif
Unis.

61
Picc.
Fl.
Solo
Bsn.
2 F Hn.
Vln. 1
Sourdines
Div.
Vln. 2
Vla.
Vlc. solo
D.B.
pizz.
69
Fl.
2 F Hn.
Vln. 1
Vln. 2
Vla.
Vlc.
Div.
D.B.
arco

77 Un peu retenu
Ob. ppp
Vln. 1
Vln. 2
Vla. 4 Vla. Soli pp pp

ADDITIONAL PIANO-ORCHESTRA TRANSCRIPTIONS FOR STUDY

Copland, *Piano Variations* arranged as *Orchestral Variations*
Dallapiccola, *Variazioni*, a transcription of his *Quaderno musicale di Annalibera*
Musorgsky, *Pictures at an Exhibition*: compare the transcriptions by Ravel and Stokowski
Ravel, *Le Tombeau de Couperin; Valses nobles et sentimentales; Rapsodie espagnole; Alborada del gracioso*
Respighi-Rossini, *La Boutique fantasque*
Satie-Debussy, *Trois gymnopédies*
Schuman, *Variations on America* (from Ives's organ version)

Transcribing from Small Chamber Ensemble to Orchestra

Stravinsky, Transcription of Pergolesi's Trio Sonata in G major

Stravinsky had the extraordinary ability to take preexisting materials—that is, works written by other composers such as Bach, Tchaikovsky, and others—and adapt them in his own works. Yet they all sound like Stravinsky; he was always able to manipulate the music so that in the end it had the Stravinsky touch. Invariably, Stravinsky would become thoroughly familiar with the past composer's entire *oeuvre* and study that composer's compositional and orchestrational techniques. Only after this in-depth exploration did he set about to transcribe the older work.

As the Sinfonia for his *Pulcinella* ballet (which he later made into a suite) Stravinsky chose the first movement of the G major Trio Sonata, a work from the Baroque period presumed to be by Giovanni Battista Pergolesi (1710–1736).* Stravinsky's transcription at once captured the spirit of the Baroque period and sounded quite new and fresh, even though it was based on preexisting sources. We will carefully study the manner in which Stravinsky scored this piece to find

*The nineteenth-century musicologist Hugo Riemann first attributed this piece to Pergolesi, and it is his edited version of the piece that is used in Example 17-13. Musicologists have since discovered that this work is not by Pergolesi but rather by one of his contemporaries, Domenico Gallo.

his modus operandi, a pursuit that can teach us how to make similar successful transcriptions.

Stravinsky scored the trio sonata for an instrumental combination that reflects the concerto grosso tradition of the late Baroque period, with a *concertino* group (in Stravinsky's version, the solo quintet) pitted against a string orchestra or *ripieno* (in Stravinsky's version, the orchestral quintet). The adaptation itself is rather straightforward. Stravinsky changes the notation so that 4/4 meter is retained most of the way through, thereby ensuring fewer ensemble problems. Stravinsky also reinterprets some of the ornaments, such as the mordent at the end of measure 4 in the trio version, which becomes a double grace note in the transcription (measure 5). Stravinsky must have acknowledged the many dynamic markings in the version of the trio sonata from which he made his transcription; these were placed there in the nineteenth century by the editor Hugo Riemann. Since Stravinsky's dynamic markings are different from those of Riemann, we can surmise that he either chose to ignore Riemann's or to alter the dynamics even further. Notice that Stravinsky begins the first phrase forte. In addition, he orchestrates the dynamic change between the first and second phrases by lightening the texture of the second phrase (measures 5–6); then, by dropping out the winds, horns, and double bass, he creates a color change that makes the entrance of the solo oboe and bassoon at measure 7 sound very fresh. The bassoon's melodic counterpoint in measures 7–10 emphasizes the important harmony notes as they are indicated in the original piece's figured bass. Riemann chose to realize the harmony in this passage one way; Stravinsky does it sometimes more simply, other times more contrapuntally, but rarely changing the harmonic intentions of the original composer. Instead, his main concern is color change, which he accomplishes smoothly and gracefully, never breaking up a phrase needlessly but rather always preserving its shape. For this reason the melodies in Stravinsky's version come through quite clearly.

EXAMPLE 17-13. Stravinsky, Transcription of an Eighteenth-Century Work in His *Pulcinella*

a. "PERGOLESI" (GALLO), TRIO SONATA IN G MAJOR, FIRST MOVEMENT, MM. 1–15 (CONTINUO REALIZATION BY HUGO RIEMANN)

4
Vln. 1
Vln. 2
Vlc.
Pno.
mf
dim.
p
8
11
cresc.
f
fp

b. STRAVINSKY, *PULCINELLA*, SINFONIA, MM. 1–15

CD-5/TR. 74

6

Ob. 1 Solo

Bsn. 1 Solo

Vln. 1 solo

Vln. 2 solo

Vla. solo

Vlc. solo

D.B. solo

Vln. 1

Vln. 2

Vla.

Vlc.

D.B.

pp *pp* *pp* *p* *p* *p* *p*

10

Ob. 1

Ob. 2

Bsn. 1

Bsn. 2

F Hn. 1

Vln. 1 solo

Vln. 2 solo

Vla. solo

Vlc. solo

D.B. solo

Vlc.

D.B.

Soli

p subito

sf *sf*

Schoenberg, Transcription of Brahms's G Minor Piano Quartet

We will now examine some of the techniques Schoenberg used in his transcription of Brahms's G minor Piano Quartet. It is obvious here, as it was in the Pergolesi-Stravinsky example, that Schoenberg was intimately familiar with Brahms's compositional and orchestral style, the most important precondition for transcribing any work. On the whole, Schoenberg does not change any of the harmony of the Brahms work; except for a much greater use of the trumpets and xylophone in the last movement, as well as the E♭ clarinet throughout, he tries for a Brahmsian orchestral sound. We will study one excerpt from the score to learn how Schoenberg deals with color distribution and substitution, as well as with transcribing the very idiomatic piano part.

The original quartet opens with piano octaves, which Schoenberg transcribes simply for three clarinets. In measure 4, the typical Brahmsian combination of bassoons, horns, and two clarinets ends the phrase and prepares for the color contrast of the strings' entrance in measure 5. In both the original and the transcription the string sound is first heard in measure 5; but instead of doubling this string part at pitch as Brahms did, Schoenberg uses octave doubling, which creates a richer sound and perhaps also compensates for the similarity of instrumental color (first violins and cellos in Schoenberg's version versus cello and piano in Brahms's). In any case the violins and cellos would swallow each other if they were doubled at pitch. The entrance of the viola in the quartet is taken by the horn, which makes the upcoming violin entrance sound more poignant. The switch of the *Hauptstimme*, or main melody, between choirs is not only colorful but also emphasizes the pseudo-fragmented presentation of the original Brahms theme: two measures, one measure, two measures and a beat, and so forth. Measures 6–10 are more richly orchestrated, but still reproduce the smooth texture and soft dynamic of the original. At measure 11 a bridge passage begins and with it, an entirely new texture.

EXAMPLE 17-14. Schoenberg, Transcription of a Brahms Piano Quartet

a. BRAHMS, PIANO QUARTET IN G MINOR, OP. 25, FIRST MOVEMENT, MM. 1–10

CD-5/TR. 75

b. ORCHESTRAL VERSION BY SCHOENBERG

Allegro (♩ = 132)

We urge you to obtain scores of both the Brahms Quartet and Schoenberg's orchestration of it; so much can be learned from comparing the two. Even though Schoenberg tried to remain faithful to the Brahmsian orchestral sound, his more soloistic use of trumpets and his use of the E♭ clarinet and xylophone, especially in the final movement of the piece, create a more twentieth-century sound than its nineteenth-century origins would suggest. The xylophone in the final movement, called *Rondo alla zingarese*, gives a gypsy flavor to the work. But

Schoenberg decided to create this ethnic flavor by using a Western instrument rather than resorting to the more characteristically ethnic cimbalom, which Kodály introduced only a few years later into his Hungarian and gypsy pieces.

TRANSCRIBING FROM BAND OR WIND ENSEMBLE TO ORCHESTRA

When transcribing band scores to orchestral scores, we deal with two large performing organizations, the first of indefinite and the second of definite size. We know that the orchestral complement consists of whatever the composer specifies; except for the fluctuating number of strings, if a part is specified for two players—for instance, for two flutes—it will be played by exactly two flutes. In the average band the situation is different: if there are three clarinet parts, for example, as many as fifteen clarinetists may play each part. (Therefore, when the composer desires a solo clarinet to play a particular passage in music for band, he or she must write the word *solo* in the first clarinetist's part.) The potentially massive sound of the band's clarinet section should be kept in mind when transcribing from band to orchestra, for there is no equivalent to this within the orchestra.

Whether a certain piece sounds better in its band or orchestral version is a rhetorical question; it depends on the taste of the composer, the performers, and the audience. To argue whether "Elsa's Procession" by Wagner should still be performed in its band version is fruitless; the question should address a more fundamental problem: If no orchestra is available, is it not better for players and audience to experience this great work in a band transcription than never to hear it at all?

In fact, the two media have their own peculiar sounds; no orchestra can be made to sound exactly like a band, or vice versa. Even so, there are many similarities between writing for orchestra and for band. For instance, we treat the wind and brass instruments themselves (their playing techniques, ranges, tone colors, strengths and weaknesses of sound) in the same way. And we always need to strive to keep the choirs of whatever ensemble we are writing for well balanced.

As we concern ourselves with the task of transcribing from one medium to another, we need to be mindful of taste and good judgment; our decisions should not lead to loss of the work's musical content or the composer's basic decisions about the quality of each sound. We should sensitively realize the dynamics, the implied colors, and the emotional "feel" of the original sound or section of the work. And we must retain the composer's intentions of which parts predominate and which act as background. This last consideration is often crucial when assigning a particular melody or a specific harmonic or contrapuntal background to an instrument or group of instruments.

We can gain much insight into how composers have treated these two performing media by examining transcriptions the composers themselves have made. In this section we will examine two transcriptions from band to orchestra by Darius Milhaud and Arnold Schoenberg, dwelling on the following considerations:

1. How much of the band scoring was kept in the orchestral transcription? How is the composer's view of each medium reflected in the transcription?
2. Were significant instrumental substitutions made to the solos? Why? Can you find a logic behind these changes?
3. How were the parts for band instruments that are absent from the standard orchestra handled in the orchestration? What role did the strings inherit?
4. Were any changes in notation necessary?

We must be especially mindful of how the composers handled color and assigned foreground-background ideas with the addition of strings.

Milhaud, *Suite française*, Band and Orchestral Versions

Because both the band and orchestral versions of Milhaud's *Suite française* were written for high school groups, the composer took care to minimize all technical difficulties and use a smaller range for the individual instruments. Both band and orchestral versions give off a Gallic flavor melodically and coloristically (reminiscent of French band music). The plentiful doubling in the band version, however, produces a heavier texture than that in the orchestral version.

In the first example (Example 17-15), all clarinets play in the band version, both in unison and in octaves with each other, the higher E♭ clarinet line also doubled by the flutes. The horns and bass saxes play the countermelody in octaves, and the short chords are scored for timpani, string bass, and all the trombones. In contrast, the orchestral transcription has a lighter, chamber-music quality, with the first violins playing in a fairly weak register and all woodwind parts assigned to only one instrument. When the solo first violin enters in measure 29 it is doubled an octave higher, only by one flute.

EXAMPLE 17-15. Milhaud, *Suite française*, second movement

a. BAND VERSION, MM. 25–36

CD-5/TR. 76

25 **Andante**

Picc.

Fl. 1, 2 — a 2, *mf*

Ob. 1, 2

Bsn. 1, 2 — *mf*

E♭ Cl. — *mf*

B♭ Cl. 1, 2, 3 — 1., a 3, *mf*

E♭ Alt. Cl. — *mf*

B♭ Bs. Cl. — *mf*

E♭ Alt. Sax. 1, 2 — a 2, *mf*

B♭ Ten. Sax.

E♭ Bar. Sax.

B♭ Bs. Sax. — *mf*

F Hn. 1, 2 — a 2, *mf*

F Hn. 3, 4 — a 2, *mf*

B♭ Cor. 1, 2, 3

B♭ Tpt. 1, 2

Trb. 1, 2 — open, *mf*

Trb. 3 — open, *mf*

Bar.

Tba. — *mf*

Str. Bs. — *mf*

Timp. — *mf*

Perc.

31

Fl. 1, 2
Bsn. 1
Bsn. 2
E♭ Cl.
B♭ Cl. 1
B♭ Cl. 2
B♭ Cl. 3
B♭ Bs. Sax.
F Hn. 1, 2
F Hn. 3, 4
Trb. 1, 2
Trb. 3
Tba.
Str. Bs.
Timp.

b. ORCHESTRAL VERSION, MM. 25–36

CD-5/TR. 77

25 Andante

2 Fl.
2 Ob.
2 B♭ Cl.
2 Bsn.
2 F Hn.
2 C Tpt.
2 Trb.
Timp.
Perc.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

1. arco arco Solo

31

2 Fl.
2 B♭ Cl.
2 Bsn.
2 F Hn.
Timp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Tutti Solo

Where the band version sustains the same or similar colors throughout the passage, the orchestral transcription constantly alternates between doubling instruments: now brass, now woodwinds, which provides coloristic variety.

EXAMPLE 17-16. Milhaud, *Suite française*, fifth movement

CD-5/TR. 78

a. BAND VERSION, MM. 1–11

Animé (♩ = 138)

Fl. 1, 2
Bsn. 1, 2
E♭ Cl.
B♭ Cl. 1
B♭ Cl. 2
B♭ Cl. 3
B♭ Bs. Cl.
B♭ Bs. Sax.
F Hn. 1, 2
F Hn. 3, 4
Trb. 1, 2
Trb. 3
Tba.
Str. Bs.

6

Fl. 1, 2

Bsn. 1, 2

E♭ Cl.

B♭ Cl. 1 — div. unis. — div.

B♭ Cl. 2

B♭ Cl. 3

B♭ Bs. Cl.

B♭ Bs. Sax.

F Hn. 1, 2

F Hn. 3, 4 — 3. — 3.

Trb. 1, 2

Trb. 3

Tba.

Str. Bs.

CD-5/TR. 79

b. ORCHESTRAL VERSION, MM. 1–10

Animé (♩ = 138)

2 Fl.
2 Ob.
2 B♭ Cl.
2 Bsn.
2 C Tpt.
2 Trb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

2 Fl.
2 Ob.
2 B♭ Cl.
2 F Hn.
2 C Tpt.
2 Trb.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Aware that many high school wind players may be better skilled than the string players, as in Example 17-16, the composer doubles the violin melody with the flutes at the higher octave in the orchestral version so that the first violins never have to go beyond third position. Here, as in many other places, he leaves out the brass altogether until its significant entrance in measure 57, whereas in the band version he has the brass play throughout the whole passage.

EXAMPLE 17-17. Milhaud. *Suite française*, fifth movement

a. BAND VERSION, MM. 50–57

CD-5/TR. 80

54
molto rit.
Picc.
a 2
Fl. 1, 2
mf
Ob. 1, 2
Bsn. 1, 2
B♭ Cl. 1
B♭ Cl. 2, 3
B♭ Bs. Cl.
B♭ Bs. Sax.
B♭ Cor. 1
Soli
ff
B♭ Cor. 2, 3
Soli
ff
B♭ Tpt. 1, 2
Soli
ff
Trb. 1
Trb. 2
Trb. 3
Bar.
mf
Tba.
Str. Bs.
S. Dr.
Dr. sticks
ff

b. ORCHESTRAL VERSION, MM. 51–60

CD-5/TR. 81

Schoenberg, *Theme and Variations*, Op. 43a and b

The orchestral version of Arnold Schoenberg's *Theme and Variations* (Op. 43b) is more a recomposition of the band version (Op. 43a) than a straight transcription. The composer did not simply substitute strings for the nonorchestral instruments (saxophones, euphonium, and so forth) but radically changed instrumental colors to make the two versions sound completely different. For instance, in the very opening of the orchestral version (Example 17-18b) Schoenberg replaces a typically thick band color of clarinets and oboes in unison (Example 17-18a) with the clear solo voice of a trumpet; even more striking is the radical change in dynamics—forte for band, piano for orchestra.

EXAMPLE 17-18. Schoenberg, *Theme and Variations*, mm. 1–6

a. OP. 43A (BAND)

CD-5/TR. 82

Poco allegro (♩ = 84)

Picc.
Fl. 1, 2
Ob. 1, 2
Bsn. 1, 2
E♭ Cl.
B♭ Cl. 1, 2
B♭ Cl. 3
E♭ Alt. Cl.
B♭ Bs. Cl.
E♭ Alt. Sax. 1, 2
B♭ Ten. Sax.
E♭ Bar. Sax.
B♭ Cor. 1, 2
B♭ Tpt. 1, 2
B♭ Flhn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
Trb. 1, 2
Trb. 3
Bar. Euph.
Tba.
Str. Bs.
Timp.
Cymb. Bs. Dr.

CD-5/TR. 83

b. OP. 43B (ORCHESTRA)

Poco allegro (♩ = 84)

Picc.
Fl. 1, 2
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
B♭ Bs. Cl.
Bsn. 1, 2
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
C Tpt. 1
C Tpt. 2, 3
Trb. 1, 2
Trb. 3
Tba.
Timp.
Perc. 1
Perc. 2
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Schoenberg's method of substituting instruments has immediate consequences in the first variation, where the orchestral oboe plays the trumpet's line in the band version; in the orchestral version the oboe becomes the principal voice (measures 22–23), whereas in the band version a completely different part, played by the flutes and clarinets, is marked as the principal voice.

EXAMPLE 17-19. Schoenberg, *Theme and Variations*, Variation I, mm. 22–26

a. OP. 43A (BAND)

CD-5/TR. 84

CD-5/TR. 85

b. OP. 43B (ORCHESTRA)

Poco allegro
a tempo

Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
B♭ Bs. Cl.
Bsn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
C Tpt. 1
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

Solo 1 con sord.
Solo 2 con sord.
Solo 3
Solo 4
dolce
muted
Tutti (con sord.)
pizz.
con sord. (pizz.)
arco

The muted upper strings and pizzicato cellos and basses in Variation I give off a much softer color than the clarinets, euphonium, cornets, horns, and saxes. The greater delicacy of the orchestral version contrasts with the band's more gutsy sound. This change of emphasis was no doubt deliberate on Schoenberg's part; he was a fine orchestrator who could have simulated the band sound quite readily in his orchestral transcription. But instead he gave us two different ways of expressing the same musical idea.

Let us now study one other variation in greater depth. Although the flute solo at the beginning of Variation IV was transferred intact, the orchestra has a more subdued accompaniment. The clarinet, muted trumpets, and baritones of the band version have been replaced by muted solo strings and tutti strings playing *col legno battuto* (measures 106–113). Then, with the orchestral trumpets resuming their original role (starting in measure 113), solo strings continue their extremely soft accompaniment instead of the much more piercing muted cornets, trumpets, and baritones of the band version. At the end of the flute solo (measure 122) the clarinet color of the band version is replaced by an oboe–English horn combination in the orchestra, and the alto clarinet–alto saxophone combination is assigned to muted trombones. Remember that a section in a band may consist of several instruments playing a solo part, which would necessitate heavier scoring for its accompaniment. Notice the "fluttering" figures (*sul ponticello*) in the second violin that Schoenberg invents in measures 122–123; these have no equivalent in the band setting. A drastic change of color occurs in the orchestra when the flugelhorn's theme of the band version is played by the low flute and high bassoon, and the baritone-euphonium part is given to the very soft clarinets (measures 124–125). Strangely enough, the next two measures of the orchestral version are an exact transcription of the band version. In measure 129, we feel a lightness in the orchestral version that is lacking in that for the band; the trumpet is kept muted and the oboe melody is not doubled, as it is in the band version. Then (measures 132–139), we have a wonderful exchange of high and low tessitura when the flutes and clarinets, doubled in the lower octave by the second violin, play the first phrase, and the violins in the upper register (measures 136–137), doubled by the winds at the lower octave, play the next. This scoring is more sophisticated and less piercing than what we find in the original band score. Both versions end the variation in a similar manner, except that in the orchestral version the violas provide a much softer sound than the band version's flugelhorn. The muted lower strings bring about a peaceful close more easily than the tubas and basses in the band version possibly could.

We urge you to study the rest of this marvelous piece on your own. You can learn a great deal about orchestral and band colorations, substitutions, and sensitive alterations, all of which will increase your roster of useful techniques in writing for orchestra as well as for band.

EXAMPLE 17-20. Schoenberg, *Theme and Variations*, Variation 4 (complete)

CD-5/TR. 86

a. OP. 43A (BAND)

120

Fl. 1, 2

Bsn. 1, 2

B♭ Cl. 1

B♭ Cl. 2

B♭ Cl. 3

E♭ Alt. Cl.

B♭ Bs. Cl.

E♭ Alt. Sax. 1, 2

B♭ Ten. Sax.

E♭ Bar. Sax.

B♭ Cor. 1, 2

B♭ Tpt. 1, 2

B♭ Flhn. 1, 2

Bar. Euph.

Tba.

Trgl. Tamb.

Solo

muted

open

p dolce

127

Picc.
Fl. 1, 2
Ob. 1, 2
Bsn. 1, 2
E♭ Cl.
B♭ Cl. 1
B♭ Cl. 2
B♭ Cl. 3
E♭ Alt. Cl.
B♭ Bs. Cl.
E♭ Alt. Sax. 1, 2
B♭ Ten. Sax.
E♭ Bar. Sax.
B♭ Cor. 1, 2
B♭ Tpt. 1, 2
B♭ Flhn. 1, 2
Bar. Euph.
Tba.
Xyl.

134

Picc.
Fl. 1, 2
Ob. 1, 2
Bsn. 1, 2
E♭ Cl.
B♭ Cl. 1
B♭ Cl. 2
B♭ Cl. 3
E♭ Alt. Cl.
B♭ Bs. Cl.
E♭ Alt. Sax. 1, 2
B♭ Ten. Sax.
E♭ Bar. Sax.
B♭ Cor. 1, 2
B♭ Tpt. 1, 2
B♭ Flhn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
Trb. 1
Trb. 2, 3
Bar. Euph.
Tba.
Xyl.
Glsp.

a 2
open
Tutti

141
rit.
Picc.
Fl. 1, 2
B♭ Cl. 1
B♭ Cl. 2
B♭ Cl. 3
E♭ Alt. Sax. 1, 2
B♭ Ten. Sax.
E♭ Bar. Sax.
B♭ Cor. 1, 2
B♭ Flhn. 1, 2
F Hn. 1, 2
F Hn. 3, 4
Bar. Euph.
Tba.
Timp.
Trgl. Tamb.
Glsp.
p dolce

b. OP. 43B (ORCHESTRA)

CD-5/TR. 87

Tempo di valse (𝅗𝅥 = 60)

Fl. 1, 2
B♭ Cl. 1, 2
B♭ Bs. Cl.
C Tpt. 1, 2
Perc. 2
Vln. 2
Vla.
D.B.

Fl. 1, 2
B♭ Cl. 1, 2
B♭ Bs. Cl.
C Tpt. 1
C Tpt. 2
Perc. 1
Perc. 2
Vln. 2
Vla.
D.B.

118

Fl. 1, 2
Ob. 1, 2
Eng. Hn.
C Tpt. 1
C Tpt. 2
Trb. 1, 2
Trb. 3
Perc. 2
Vln. 2
Vla.
D.B.

Tamb.
div. col legno battuto
arco pont.
muted
muted

124

Fl. 1, 2
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
B♭ Bs. Cl.
Bsn. 1, 2
Cbsn.
C Tpt. 1
C Tpt. 2, 3
Trb. 1, 2
Trb. 3
Vln. 2

dolce
p dolce
muted
muted
muted

130

Fl. 1, 2
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
B♭ Bs. Cl.
Bsn. 1, 2
F Hn. 1, 2
C Tpt. 1, 2
Trb. 1, 2
Perc. 1
Vln. 1
Vln. 2
Vla.
Vlc.

a 2
Xyl.
muted
Tutti senza sord.

136

Picc.
Fl. 1, 2
Ob. 1, 2
Eng. Hn.
B♭ Cl. 1, 2
B♭ Bs. Cl.
Bsn. 1, 2
Cbsn.
F Hn. 1, 2
F Hn. 3, 4
C Tpt. 1, 2
Trb. 1, 2
Trb. 3
Tba.
Perc. 1
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

a 2
open
Gspl.
pizz.
div.
senza sord.

TRANSCRIBING TO VARIOUS AVAILABLE INSTRUMENTAL COMBINATIONS

A great many orchestral, chamber, and piano works may be adapted to meet the special circumstances in which we may find ourselves. Transcribing any work, especially a standard orchestral work, for an often bizarre ensemble may tax our orchestrational skill to the limits. We must be aware of the heterogeneous nature of the available instruments as well as the limited skills that each player may bring to the group. However, these conditions should spark our imagination rather than constrain us.

There is no reason for not transcribing a work to any medium because it contains, for example, an English horn solo that would not sound right on any other instrument. Any transcription will necessarily sound differently from the original. But if we follow the steps for transcribing that are given below, if we respect and love the piece we are adapting, and if we know the piece's form

and original orchestration well, we will be able to make a very satisfactory transcription.

How does one go about such a task?

1. Reduce the orchestral work to a piano score. If it is a very complex work, a piano four-hand or two-piano score will be even more helpful.*
2. Carefully designate the sections in the piano score as tutti, half tutti, soli, or solo.
3. Label the solo instruments and determine whether you have adequate soloists in the group. If an instrumental substitution is called for, you may want to choose an instrument that closely approximates the original one or a combination of two instruments that give a similar result. If this is not possible because of the limited choices you have available, select an instrument that possesses the range and dynamic possibilities suitable to the solo.

Other orchestration books supply a list of substitution instruments. We prefer instead that you experiment with the many possibilities, using the knowledge you have gained from listening to and analyzing the piece to decide which instrument is the best substitute. Consider the range, quality of the sound, given register, and the skill of the player for which the part is intended.

Certainly use a good pianist, if one is available in the group. Rather than having the pianist play the reduction of the piece from beginning to end, use the piano as another orchestral instrument, to lend body to tutti sections, provide arpeggiated accompaniments, render the harp parts, take occasional single line solos, or double solos, perhaps in the higher registers.

If a percussion player is present, write a percussion part only where the music absolutely calls for it. Remember, overusing percussion instruments can obliterate the rest of the orchestral sound, no matter the size of the group.

Most amateur performers have problems playing in the extreme higher or lower registers; on some instruments, such as the flute, oboe, bassoon, horn, trumpet, tuba, and their auxiliaries, the very lowest notes are quite problematic. To help you write appropriate parts for nonprofessionals we give approximate, comfortable ranges for each instrument in Appendix A. If you go much beyond these, your transcription will not work, no matter how brilliantly you execute it.

If you can choose the work to transcribe, you might consider selecting a relatively unknown work because: (1) the players and audience won't automatically compare the transcription with the original; and (2) performers and audience alike may benefit from being exposed to pieces of music that, for one reason or another, have not been widely disseminated.

Let us now simulate a typical situation that may confront us in a school or community: transcribing pieces for *our* orchestral ensemble. In this exercise we will transcribe a portion of a work originally written for chamber ensemble and a portion of an overture originally written for full orchestra. In each case the original is given. For the second piece, the *Poet and Peasant* overture by Franz von Suppé, we also provide a piano four-hand reduction. Each transcription presents only one possibility among a number of solutions. After working with these two examples you should be able to make similar transcriptions, including those given in the workbook.

---

*In the workbook we have included exercises that focus on reducing orchestral scores to piano scores to help you develop this skill.

The following list gives the players in our imaginary ensemble, as well as the relative technical proficiency of each player:*

2 flutes; both rather good
3 clarinets in B♭; the first very good, the others fair
1 alto saxophone; quite good
2 trumpets in B♭; fair
1 euphonium; very good
1 timpani player (three drums); not too adept at changing pitch
1 percussion player; counting is not her greatest strength
5 first violins; three are excellent to fifth position, two are good to third position
4 second violins; all are rather mediocre and cannot play beyond first position
3 cellos; the first is excellent, the other two are mediocre
1 double bass; not too proficient

This fairly typical cast of characters exhibits common instrumental gaps: no double reeds, no horns, and no violas. If there were a trombone or two, or even a tuba, our transcription could easily accommodate these instruments.

For our first transcription (Example 17-21), the main theme, which is presented in the original by one instrumental color (the first violin starting in measure 4 and the second violin starting in measure 11), is orchestrated using two completely different timbres: clarinet, then trumpet, the latter giving the theme a new character. The bass drum and timpani, however, add a bit of pathos to this solemn piece.

EXAMPLE 17-21. Schumann, Piano Quintet, Op. 44, second movement, mm. 1–16

a. ORIGINAL VERSION

In Modo d'una Marcia
Un poco largamente (♩ = 66)

Vln. 1
Vln. 2
Vla.
Vlc.
Pno.

molto p ma marcato

*Please refer to Appendix A for nonprofessional instrument ranges.

9

Vln. 1

Vln. 2

Vla.

Vlc.

Pno.

p

CD-5/TR. 88

b. NEW ORCHESTRAL VERSION

Un poco largamente

1

2 Fl.

B♭ Cl. 1

Euph.

Perc.

Vln. 1

Vln. 2

Vlc.

D.B.

p *sempre p ma marcato*

pp

Bass Dr.

ppp

div.

6

2 Fl.
B♭ Cl. 1
B♭ Cl. 2, 3
2 B♭ Tpt.
Euph.
Timp.
Perc.
Vln. 1
Vln. 2
Vlc.
D.B.

p *pp* *p* *pp* *ppp* div. unis. div. div. unis.

12

2 Fl.
B♭ Cl. 1
B♭ Cl. 2, 3
E♭ Alt. Sax.
2 B♭ Tpt.
Euph.
Timp.
Vln. 1
Vln. 2
Vlc.
D.B.

mp *pp* *pp* *pp* pizz. *pp* pizz. *pp* *pp* pizz. *pp* *pp*

For the first rendition of the theme the harmonic accompaniment, played in the original mostly by the piano and lower strings, is distributed among the strings at the beginning of the new version to ensure that it is played quietly under the clarinet melody. With the trumpet's presentation of the theme in measure 11 the accompaniment changes from strings to winds; notice that in these measures the euphonium part strengthens the bass line. The flutes open up the range of the piece and add extra sheen by being given the opening piano line (which recurs in measure 10) but an octave higher.

For the transcription of von Suppé's *Poet and Peasant* overture we have also included a piano four-hand version (Example 17-22b, p. 750); when transcribing a large orchestral work for a particular ensemble of players you may wish to start by making your own piano reduction.

EXAMPLE 17-22. Von Suppé, *Poet and Peasant* Overture, mm. 1–35

a. ORIGINAL ORCHESTRAL VERSION

13

Fl.
Picc.
Ob.
C Cl.
Bsn.
D Hn.
D Tpt.
Trb.
Euph.
Timp.
Bs. Dr.
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
D.B.

ff fff pp mf

con Piatti

Solo

17
C Cl.
Bsn.
Hp.
Vlc.
pp
pp
pp
pp
3
3

22
C Cl.
Bsn.
Hp.
Vlc.
pp
pp
3
3
3

27
C Cl.
Bsn.
Hp.
Vlc.
pp
pp
3
3

31

Fl.

Picc.

C Cl.

Bsn.

D Hn.

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

pizz.

D.B.

b. PIANO FOUR-HAND VERSION

SECONDO

Andante maestoso

rall.

a tempo

riten.

a tempo

PRIMO

Andante maestoso

espressivo

rall.

a tempo

riten.

a tempo

C. NEW ORCHESTRAL VERSION

CD-5/TR. 89

13
2 Fl.
B♭ Cl. 1
B♭ Cl. 2, 3
E♭ Alt. Sax.
2 B♭ Tpt.
Euph.
Timp.
Perc.
Cymb.
Vln. 1
Solo
Vln. 2
Tutti
div.
Vlc.
arco
D.B.
arco
17
B♭ Cl. 1
B♭ Cl. 2, 3
Euph.
Vln. 1
Vln. 2
Vlc.
D.B.

21
2 Fl.
B♭ Cl. 1
B♭ Cl. 2, 3
E♭ Alt. Sax.
2 B♭ Tpt.
Euph.
Vln. 1
Vln. 2
Vlc.
D.B.
rit.
a tempo
muted 1.
Tutti
pp
p
pizz.
25
2 Fl.
B♭ Cl. 2, 3
E♭ Alt. Sax.
2 B♭ Tpt.
Vln. 1
Vln. 2
Vlc.
D.B.

29

rit. .... a tempo

2 Fl.

B♭ Cl. 1

B♭ Cl. 2, 3

E♭ Alt. Sax.

2 B♭ Tpt.

Euph.

Timp.

mp mp mp pp pp pp pp

rit. .... a tempo

Solo

Vln. 1

Vln. 2

pizz.

Vlc.

pizz. div.

D.B.

arco

p sim.

Our very simple transcription (Example 17-22c) opens with a string fanfare to save the brass section of the amateur group for the buildup starting in measure 5. Starting in measure 9 the color changes from strings to clarinets in our transcription; this simulates the change of color from brass to strings in the original; in these measures the trumpets and euphonium are also heard, and they again help make the crescendo to *fortissimo* in measure 13. In the transcription a solo violinist presents the first theme in measure 16, since this person is one of the strongest players in the amateur group. The clarinet is given the arpeggiated accompaniment played originally by the harp, and the underlying chords are played by the soft strings to mimic the lower tones of the harp as well as the sustained notes played by the original version's woodwind section. This new orchestration, of clarinet and strings, sticks close to those traditionally found in pieces composed during the nineteenth century. Like the Schumann transcription given in Example 17-21, the von Suppé transcription offers a more colorful orchestration, changing instruments for each rendition of the theme or its accompaniment. Thus, in measures 23–27 the arpeggiated accompaniment of the transcription switches to two violins and the sustained notes to the clarinets (in the original these parts remain with the harp, clarinets, and bassoons). The melody also changes timbre: here, it is played by the flute (in the original the melody is retained by the cello). At measure 28 the clarinets resume their arpeggiated accom-

paniment, which underlies the melody now played by the entire first violin section. A solo cadenza in measure 30, played by the first violin, leads to the presentation of new accompanying material played only by the winds and brass and not also by the strings, as in the original. When the second theme, played by the violins and violas, is heard in measures 33–35, the instrumental color sounds quite fresh compared with that of the original, again played by solo cello. Notice also that the double bass supports the actual bass part throughout the piece; often in amateur ensembles the bass part needs strengthening.

ADDITIONAL ORCHESTRAL TRANSCRIPTIONS FOR STUDY

Bach-Casella, *Ciaconna* (Milan: Carisch, 1936)
Bach-P. Klenovsky (Henry Wood), Organ Toccata and Fugue in D Minor (London: Oxford University Press, 1934)
Bach-Walton, *Sheep May Safely Graze* (London: Oxford University Press, 1934/1943)
Debussy-Ansermet, *Six épigraphes antiques* (Paris: Durand, n.d.)
Debussy-H. Henkemans, Twelve Preludes (Amsterdam: Donemus, 1971)
Fauré-H. Rabaud, *"Dolly"* Suite (Paris: Hamelle, 1922)
Schubert-L. Weiner, *Grand Rondeau*, Op. 107 (Budapest: Editio Musica, 1961)
Shostakovich-M. Kelemen, Eight Preludes, Op. 34 (Henry Litolff–C. F. Peters, 1971)
Sweelinck-J. Mul, *Mein junges Leben hat ein End* (Amsterdam: Donemus, 1961)

18

THE PREPARATION OF SCORE AND PARTS

"To err is human; to forgive is not our policy."

The sentiment in this paraphrase of a benevolent adage is particularly apposite to the preparation of scores and parts. Although conductors and orchestral performers may occasionally make mistakes, these very human humans usually do not forgive the errors of the orchestrator, the copyist, or the composer. Rehearsals can degenerate into traumatic grumbling sessions when frequent errors in the score or parts interfere with the smooth performance of a work. In fact, many pieces have been denied a hearing because of just such situations. It is most appropriate, therefore, that we discuss and review the correct procedures for laying out a score and extracting parts in the most professional manner.

Here are the considerations that must govern that process:

1. The score must be clear, easy to read, and as unproblematic as possible. All new, different, or original notation must be carefully explained so that when a conductor reads the score the method of realizing this notation is immediately apparent.
2. The score must be organized logically, with every instrument appropriately labeled; the vertical alignment of the music must be accurate so that all notes and beats coincide. The spacing on the page, indicating the separation of choirs, must be immediately discernable, for a conductor has to read all the lines simultaneously.
3. In addition to rehearsal numbers or measure numbers, the score must contain every detail for every instrument, including special instructions for bowing, tonguing, or articulations.

THE ORCHESTRAL SCORE SETUP

The instruments of a large symphony orchestra appear on a full score page in an unvarying order:

Piccolo
Flutes 1 and 2
Oboes 1 and 2
English horn

Clarinet in D or E♭ (the required key of the instrument indicated at the beginning of the score)
Clarinet 1 and 2 in B♭ or A (indicated at the beginning of the score)
Bass clarinet
Bassoons 1 and 2
Contrabassoon

Horns 1, 2, 3, 4 (keys of the horns indicated at the beginning of the score)
Trumpets 1, 2, 3 (keys of the trumpets indicated at the beginning of the score)
Trombones 1, 2, 3
Tuba

Timpani (number of drums should be given at the beginning of the score)
Percussion (all instruments must be listed at the beginning of the score)
Harp
Piano (or celesta)

Strings

When preparing a score to be read by a conductor or sent to a publisher for publication, it is imperative to leave space between the choirs on the score page. If you write out a score by hand, leave an empty line between the winds and the brass, between the brass and the percussion, between the percussion and the harp, and between the (harp) piano and the strings. If you construct a score via Finale or another software program, simply leave a little extra space between these choirs in your setup of the score page.

If you require additional instruments, you should fit them into their appropriate family on the score page: Wagner tubas or euphonium between the trombones and the tuba, saxophones between the bass clarinet and the bassoons. (Note that in some American scores the saxophones are printed below the bassoons or even below the brass, just above the timpani.)

The score layout given in Example 18-1 is for the entire orchestra. Notice that all staves are connected with a single bar line at the beginning of the line; heavy brackets set off the choirs; and an additional brace clarifies instruments of a family. Bar lines should be drawn only through the individual complete choirs. It is absolutely wrong to draw a bar line through the entire orchestral score, for it obscures the choirs and deters the rapid reading of the score by the conductor.

Key signatures should appear in their traditional position right after the clef signs and before the time signature. Time signatures may be repeated on every instrumental line or enlarged so that one time signature is given for each choir. Tempo markings should always be placed at the top of the score and repeated in the space that separates each choir. Dynamics are usually placed below the requisite staff, unless two instruments share a staff and two different sets of dynamics are required.

EXAMPLE 18-1. Score Layout

Allegretto ♩= 100

Alternative way of notating time signatures

Piccolo
Flute 1 2
Oboe 1 2
English Horn
E♭ Clarinet
B♭ Clarinet 1 2
Bass Clarinet
Bassoon 1 2
Contrabassoon

Allegretto ♩= 100

F Horn 1 2 3 4
C Trumpet 1 2 3
Trombone 1 2 3
Tuba

Allegretto ♩= 100

5 Timpani
Xylophone
Triangle
Snare Drum

Harp

Allegretto ♩= 100

Violin 1
Violin 2
Viola
Violoncello
Double Bass

If the composition has an independent piccolo part it appears above the flute parts. If the second or third flute player instead doubles on piccolo, the piccolo part will appear on the line normally read by that player. The alto flute part is always placed below the regular flute parts; most often it is doubled by the third flute.

Likewise, the second or third oboist may double on English horn, a clarinetist on bass clarinet, a bassoonist on contrabassoon. To indicate that a player is to change instruments, the instruction "change to _________,"—or in Italian, "muta in _________,"—should be written above the player's staff in the score as well as the player's part and given well ahead of time. A change of key signature or clef that is required because the new instrument is in a different transposition should also appear at the point of change.

From time to time, the horns are grouped 1, 3 and 2, 4 on two staves when each pair plays a great many unison passages as high and low horns. However, more often Horns 1 and 2 share one staff, 3 and 4 the other.

Trumpets are written on two staves, as are trombones. Trumpet 1 is separated from Trumpets 2 and 3; the two tenor trombones (Trb. 1, 2) occupy the first staff and the bass trombone the second (Trb. 3).

The above discussion concerns only the initial page of a score; subsequent score pages should follow the same model, except that you may use abbreviations for the instrument names. It is not necessary to repeat the transposition of a particular instrument on every page unless there is a change from one transposing instrument to another in the middle of a work, such as B♭ clarinet switching to A clarinet.

Although some composers use all kinds of notational short cuts, such as leaving out clefs or key signatures after the initial page, we strongly discourage this custom—even though it appears extensively in jazz charts. Although the cutout score originated by Stravinsky that was used ubiquitously throughout the 1960s and early 1970s is no longer popular, you will encounter it often in mid-twentieth-century scores. In this kind of score, the staves begin where the particular instrument starts to play and stop as soon as that instrument ceases to play. Notice in the following example that each instrument is always placed in the correct choir and is labeled every time it enters.

EXAMPLE 18-2. Stravinsky, *Movements for Piano and Orchestra*, mm. 13–26, Cutout Score

♪ = 110
13
14
15
16
Fl. 1
Cl.
Bs. Cl.
Pno.
f
mf
espress. mf
17
18
19
20
21
p
r.h.
Vla.
pizz. sf
sim.
Vlc.
(non div.)
pizz.
D.B.
sf
1.
p
r.h.
p
l.h.
l.h.
22
23
24
25
26
(tutti) arco
Vlc.
p

THE REDUCED SCORE

After the initial page, subsequent pages may contain more than one system, each of which shows only those instruments playing at the same time. Systems on pages such as this are called *reduced scores*. When using reduced score pages, insert two heavy slash marks between the systems so that it will be easy for the eye to separate them immediately. Also, clearly mark all the instruments in all systems appearing in a reduced score and retain the order of choirs as it appears on the initial page of the score.

EXAMPLE 18-3. Mahler, Symphony No. 1, first movement

a. FULL SCORE PAGE, MM. 269–274

b. REDUCED SCORE PAGE, MM. 275–287

275

Ganz unmerklich etwas zurückhalten

20

Etwas gemächlicher als zuvor.

Fl.

Cl.

1, 2 Hn. 3, 4

Ganz unmerklich

Vln. 1

Vln. 2

Vla.

Vlc.

arco

D.B.

281

Fl.

Cl.

Hn. 1, 2

Hp.

Resonanztisch

deutlich

Vln. 1

sempre pp

pizz.

Vln. 2

pp geth.

Vla.

Vlc.

sempre pp

D.B.

sempre pp

THE CONDENSED SCORE

When writing educational or commercial music the composer is often asked to supply a *condensed score*, in which a full score is compressed to only three or four staves but which provides all the essential (melodic) pitches, rhythms, and harmonies contained in the full score. In a condensed score all pitches must be non-transposed—in other words, every note must sound as written. A regular three- or four-line condensed score, prepared for conductors who are not able to read a full score fluently, most often uses a staff for each choir. The resulting score may or may not be playable on the piano, depending on how complex it is. If the score is to be a *piano reduction*, it should be written on two staves, omitting all nonessential octave doublings so that it can be played with two hands. Here are examples of a full score, condensed score, and a piano score of the same passage.

EXAMPLE 18-4. Brahms, Symphony No.1, first movement, mm. 82–87

a. FULL SCORE

b. CONDENSED SCORE

Allegro

82

Woodwinds

ff

Brass and Timpani

f

Strings

ff

ff

85

Woodwinds

Brass and Timpani

Strings

c. PIANO REDUCTION

Allegro

82

sf

sf

ff

85

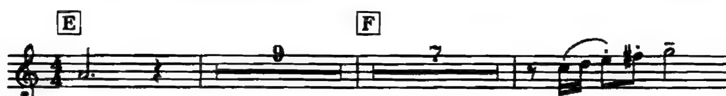
PREPARING INDIVIDUAL PARTS

The clearer the parts the easier it is to perform a work, particularly if the orchestral score has a dense texture and contains technically taxing passages. If the work contains unusual notation it is essential that all notation other than the standard, universally accepted symbols be carefully explained in a "Guide to the Notation" at the beginning of the individual part. The composer or orchestrator must also keep in mind that correcting a single wrong note in rehearsals of professional symphony orchestras might cost upwards of $200 per minute.

Here are some important guidelines to follow in extracting parts from a score:

1. Use a good-size paper (9½" × 12½") with no more than twelve staves on each page, and provide each player with his or her own part. Strings, of course, should have one part per stand.
2. Use ink rather than pencil, if you are not using a computer program to make your score.
3. Make the note heads at least as large as those printed in a published part for easy visibility. The same holds true for the flags on eighth or sixteenth notes, the rests, and the thickness of beams denoting rhythmic divisions.
4. Be sure to include rehearsal numbers or letters, or number the measures of the work by fives or tens in both score and parts. Make certain that every player has detailed information about what is happening every moment in the performance, whether he or she is playing or not. Chaos may result if a rehearsal number or letter or a change of meter is omitted because it occurs while an instrument is resting. Let us suppose a player has sixteen measures of rest and the score has rehearsal letters placed every ten measures. Here is how the part should read:

EXAMPLE 18-5. Placing Rehearsal Letters within Measures of Rest



This same rule would apply if changes of meter occurred within that rest period. Now let us suppose that five measures after E is in 2/4, and the rest of the measures are 4/4. This is how the part should read:

EXAMPLE 18-6. Placing Rehearsal Letters within Measures of Rest in Music with Changes of Meter



5. The general problem of page turning must be dealt with when you begin to lay out a part on a page. In string orchestral parts, the person on the inside of the stand turns the page, while the one on the outside continues to play so that a rest is not essential. It is imperative, however, that a woodwind or

brass player has enough time at the end of a page to make the page turn. Wind or brass players have been known to leave out an entire passage because there were no rests to free their hands. And even in string parts, you must consider the weakening effect on an important string passage when half the section drops out to turn a page.

6. Musical cues are often necessary to facilitate reentry of an instrument after a long period of rest. The notes in the cued parts should be smaller than those in the rest of the part. Both the instrument playing that particular cue and the place where the cue begins should be clearly indicated. Also, the cue should be transposed to fit the part into which it is written.

EXAMPLE 18-7. Musical Cue



7. Frequently, parts for oboes, bassoons, violas, and even horns are cross-cued in other parts so that important lines assigned to these instruments will not be lost if the original instrument is not available to a particular ensemble. Particularly in music for school orchestra, cross-cuing is advisable. For instance, important oboe or English horn lines are often cross-cued in the clarinet, violin, or muted trumpet parts, depending on where they lie in the register. Bassoons are cross-cued in the clarinet or cello parts, and sometimes a tenor saxophone part is supplied if no bassoon is available. Since violas are scarce in some high school orchestras, it may be necessary to have a third violin and a second cello part divide up the viola part; these cross-cues, however, should be used only if no violas are available. Be certain that all cross-cuing is indicated in the full score so that the conductor may assign each substitution.

   As mentioned in the chapter on transcriptions, there is no real substitute for the original instrument. However, cross-cuing will prevent the loss of important lines even if the cross-cued instrument's sound is a bit removed from the composer's original intention.

8. The following shortcuts are permissible when copying out parts:
   a. Use 8va, 15ma, or 8^{bassa} designations as much as possible to avoid more than four ledger lines above or below the staff.
   b. When a passage is repeated exactly, you may use repeat marks. It is helpful to number the repeated measures for easier execution.

EXAMPLE 18-8. Numbering Repeated Measures



   c. Use the abbreviations *sim.*, *sempre stacc.*, *sempre legato*, and so on to avoid repeating staccatos, slurs, and other details.

EXAMPLE 18-9. Using Articulation Terms



9. Two instruments that are written on the same staff in the full score should have separate parts written out for each player.

EXAMPLE 18-10. Two Instruments on the Same Staff

a. FULL SCORE



b. PARTS



Generating Scores and Parts Electronically

Since the late 1980s the use of computers and professional software programs designed to generate music scores have become ubiquitous. All music typesetting programs are as good as the person using them—in other words, an experienced typesetter is able to use any one of them and produce a perfect-looking score and beautifully clear orchestral parts. Some of the programs present problems in two areas, which necessitates checking carefully for errors.

The most crucial area concerns the placement of accidentals when two instruments are written on the same staff in a full score. Let us look at the following example:

EXAMPLE 18-11. Placement of Accidentals in a Full Score



Two oboes would have no problem reading this passage from the score since the accidentals, marked on first occurrence only, are valid throughout the measure. When some computer programs generate the separate parts from this score, however, they sometimes look this way:

EXAMPLE 18-12. Placement of Accidentals in the Resulting Computer-Generated Parts



When this happens, extra accidentals must be added in the full score to ensure that the parts for both players generated from that score contain all the required accidentals. Thus, the score passage must read:

EXAMPLE 18-13. Placement of Additional Accidentals in a Full Score



This score will then generate the following parts:

EXAMPLE 18-14. Placement of Additional Accidentals in the Resulting Computer-Generated Parts



It is imperative to carefully check each orchestral part as well as the score when they are electronically generated.

Extra precautions must be taken when electronically generating the score and parts of a highly chromatic work. The composer often writes an abundance of accidentals to remind the performer exactly which notes to play. These extra accidentals are often invaluable to the performance of a complex work, but are often cut out by the computer typesetting program as "unnecessary" whenever the accidentals have already appeared in a measure.

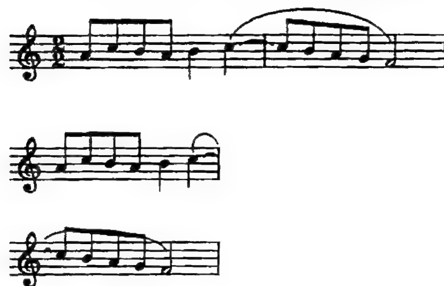
In the following passage the E♭ in the third beat and the F♯ and F♮ of the fourth beat (circled in the score) are actually gratuitous, yet they should be put into this very chromatic mix to aid the performer. You must be certain that the software program complies.

EXAMPLE 18-15. "Insurance" Accidentals



The second problem area concerns the distorted appearance of slurs and ties when held over from one system to another. This problem becomes particularly acute when the measures that contain these slurs and ties initially appear on one line or in one system but in a subsequent version of the typeset piece are broken up onto two different lines (see Example 18-16). Some computer programs do not automatically correct the resulting distortions, which therefore must be repaired manually by the computer typesetter.

EXAMPLE 18-16. Computer-Generated Ties Before Being Repaired Manually



It is hoped that these faults and others like them will be addressed in later, more sophisticated updates of music typesetting programs.

Proofreading

As a general rule, proofreading your own score and parts is a difficult chore. Therefore, we urge you to follow a two-step process to ensure a minimum of errors.

1. Proofread both score and parts thoroughly yourself.
2. Give them to someone else to proofread so that you can make certain even the smallest detail has not been overlooked. This second step can make the difference between a flawless first reading (and first impression) and a tedious rehearsal, a discouraging affair for both composer and performers.

For a more detailed study of manuscript preparation, we refer you to George Heussenstamm's very useful handbook, *The Norton Manual of Music Notation* (New York: W. W. Norton, 1987), which treats copying out scores by hand. Other books on this subject include:

Boehm, Lazlo. *Modern Music Notation*. New York: G. Schirmer, 1961.
Donato, Anthony. *Preparing Music Manuscript*. Englewood Cliffs, N.J.: Prentice-Hall, 1963.
Read, Gardner. *Music Notation*. Second Edition. New York: Crescendo Publishers, a Division of Taplinger Publishing, 1969.
_____. *Modern Rhythmic Notation*. Bloomington: Indiana University Press, 1978.
Risatti, Howard. *New Music Vocabulary*. Urbana: University of Illinois Press, 1975.
Stone, Kurt. *Music Notation in the Twentieth Century*. New York: W. W. Norton, 1980.
Warfield, Gerald. *How to Write Music Manuscript*. New York: Longman, 1977.

On setting scores electronically, you might wish to consult the following, the last three of which are trade journals:

Purse, Bill. *The Finale Primer: Mastering the Art of Music Notation with Finale 2000*, 2d ed. San Francisco: Miller Freeman Books, 2000.
Computer Music Journal. Computer Music Foundation. Cambridge, Mass.: MIT Press.
Electronic Musician. Overland Park, Kans.: Prime Media Information Group.
Keyboard Magasine. San Mateo, Calif.

Offprints of articles in these journals that deal with computer-assisted music copying, as well as information regarding the specific volumes that contain them, can be provided by each publisher.

19

Scoring for Band or Wind Ensemble

The band began mostly as an ensemble used outdoors and therefore needed multiple instruments per part for carrying power. Advocates of these ensembles have waxed eloquent about the virtues of the band sound; Frederick Fennell, for one, has stated about twentieth-century wind playing in America: "The development of wind playing has been one of this country's greatest contributions to music performance. We have unleashed a force for music making unparalleled in the whole history of musical art."* By wind playing, Fennell of course also includes woodwind and brass playing.

Many composers prefer the band sound per se; ten clarinets, for example, or a multiple of any other band instrument on a single part certainly has a characteristic sound. We saw that Mahler employed four unison flutes in his Symphony No. 4 to simulate a band sound (Example 15-18). The out-of-tuneness of an instrumental section within a band adds character and even charm to the sound.

Scoring for Band

There are similarities as well as differences in scoring for orchestra and for band. The similarities are, of course, the techniques of performing on woodwind, brass, and percussion instruments, which are the same whether these players are performing in an orchestra or in a band. It is true that most band works routinely include significant parts for cornets, saxophones, and euphoniums, but some contemporary orchestral works also employ these instruments, though not often. In addition, balance within the ensemble as well as scoring the foreground, middleground, and background are very much the same for both ensembles.

The most important difference between scoring for the two media is that in writing for band the composer or arranger never knows how many players will be assigned to a given part. Most bands have a great many players on some parts, such as the first flute or second clarinet.

*Frederick Fennell, *The Wind Ensemble* (Arkadelphia, Ark.: Delta Publications, 1988), p. 1.

BAND VERSUS WIND ENSEMBLE

The world of "bandstration" was challenged in 1952 by Frederick Fennell, who introduced a new concept: the wind ensemble. Fennell advocated the idea of an ensemble of winds, brass, and percussion, with scores stating a specific instrumentation and no doubling of parts—in other words, an orchestra-like ensemble without strings. Every wind ensemble player would play a separate part that would not be doubled by any other instrument.

During the last few decades we have seen the rise and development of the wind ensemble. Fennell's Eastman Wind Ensemble and subsequently hundreds of such groups throughout the world, including the now famous American Wind Symphony of Pittsburgh, have performed works ranging from a few players in a Mozart wind serenade to recently composed pieces for wind ensemble—some of them commissions by particular ensembles—employing a specific number of performers called for by the composer. The American Wind Symphony of Pittsburgh has consisted of a large symphonic wind section (four flutes, four oboes, four clarinets, four bassoons, four horns, four trumpets, four trombones, one tuba, and percussion; thus, 4, 4, 4, 4 / 4, 4, 4, 1 + perc.), which usually does not include saxophones, euphoniums, or cornets; but if these instruments are called for, the ensemble hires additional players.

Today, the composer or arranger can have it both ways. If a composer wishes to write a work for band and accepts the doubling pervasive in this medium, yet would like to have certain sections of the work sound cleaner and more orchestra-like, he or she can specify that a single player perform a part by placing the word *solo* at the required place in the score and the word *tutti* when all players in the section resume playing. This frequently used technique makes it easy to combine the traditional band concept with that of the wind ensemble.

THE PERCUSSION SECTION WITHIN THE BAND OR WIND ENSEMBLE

The development of playing techniques within the orchestral percussion section and the enormous growth in the numbers of different instruments used owe much to the percussion section's popularity within the marching band, the concert band, and the wind ensemble. The marching band's percussion section traditionally has led the entire ensemble and has been the most important element in accomplishing the band's mission, whether it is to entertain the football crowd at halftime or lead a parade. The percussion section within the concert band or wind ensemble, on the other hand, assumes a similar role to the one it occupies in the twentieth-century orchestra and is well integrated into the ensemble. Usually this very large section includes many pitched percussion instruments (timpani, xylophone, marimba, vibraphone, crotales, roto toms, and so on); except for the glockenspiel, none of these can be carried on a field or in a parade. In addition, the percussion section may include the piano or celesta.

We encourage you to listen to some of the great marches written for band by Sousa and others, as well as the works for band by Holst, Vaughan Williams, Grainger, and others. Then listen to some of the works for band or wind

ensemble written more recently that are listed at the end of this chapter. The differences between the two media will become instantly apparent; if you also follow the score while listening, the characteristics that separate the sound of the band from that of the wind ensemble will become even clearer.

THE BAND AND WIND ENSEMBLE SCORE SETUP

The basic instrumentation for some of the major bands is given in the following setups; in those for the marching band and concert band each instrument that is named may have from two to twenty players. Parts for band or wind ensemble should be prepared in exactly the same ways as are proposed in Chapter 18 for orchestra.

In some works for band or wind ensemble the piano, celesta, and harp may be required. These instruments are placed in the score near the percussion instruments. On occasion these scores will also ask for double basses or even cellos, which add volume and smoothness to the bass of the ensemble; they are placed below the tuba in a concert band or wind ensemble score (see Examples 17-15a and 17-18a).

Marching Band

C piccolo (the D♭ piccolo is really not in use anymore)
Flutes (some may double on piccolo)
B♭ clarinets (usually two parts)
E♭ alto saxophone
B♭ tenor saxophone
E♭ baritone saxophone
B♭ cornets (usually two parts)
B♭ trumpets (usually two parts)
E♭ or F horns
Baritones or euphoniums
Tubas or sousaphones

Standard Concert Band

Piccolo
Flutes (usually two parts)
Oboes (usually two parts which may include English horn)
E♭ clarinet
B♭ clarinet (usually three parts)
E♭ alto clarinet
B♭ bass clarinet
(Bassoons)
B♭ soprano saxophone (used in some bands)

E♭ alto saxophone
B♭ tenor saxophone
E♭ baritone saxophone
B♭ cornet (usually two or three parts)
B♭ trumpet (usually two or three parts)
F horns (usually four parts: sometimes E♭ horns are still available)
Trombones
Baritone or euphonium (sometimes two parts)
Tuba
Timpani
Percussion (usually four players)

Expanded Concert Band

Flute 1
Flute 2 (piccolo)
Oboe
E♭ clarinet
Solo clarinet and Clarinet 1
Clarinet 2
Clarinet 3
Alto clarinet
Bass clarinet
Bassoon
Alto saxophone 1
Alto saxophone 2
Tenor saxophone
Baritone saxophone
Trumpet 1 (Cornet 1)
Trumpet 2 (Cornet 2)
Trumpet 3 (Cornet 3)
F horn 1
F horn 2
Trombone 1
Trombone 2
Trombone 3
Baritone (T.C.)*
Baritone (B.C.)†
Basses (tubas)
Double bass
Timpani
Percussion 1: glockenspiel, xylophone, vibraphone, marimba
Percussion 2: wood block, temple blocks, cymbal in hand, suspended cymbal, triangle, snare drum, tenor drum, tam-tam, bass drum

---

*treble clef
†bass clef

Wind Ensemble

The instrumentation of the wind ensemble (one instrument to a part and every instrument specified) is entirely left to the composer or arranger, therefore it would be futile to dictate the exact ensemble here. However, we will give one representative example from the author's compositional output:

C piccolo 1 and 2
2 Flutes 1
2 Flutes 2
Oboe 1 and 2
English horn
Bassoon 1 and 2
Contrabassoon
E♭ clarinet
4 B♭ clarinets 1
4 B♭ clarinets 2
2 E♭ alto clarinets
2 B♭ bass clarinets
B♭ contrabass clarinet
E♭ alto saxophone
B♭ tenor saxophone
E♭ baritone saxophone
2 B♭ cornets
2 B♭ trumpet 1
2 B♭ trumpet 2
2 B♭ trumpet 3
F horn 1
F horn 2
F horn 3
F horn 4
3 Trombones 1 and 2
3 Bass trombones 3 and 4
Baritone 1 and 2 (T.C.)
Baritone 1 and 2 (B.C.); euphonium
2 Tubas (bass)
Double bass
Timpani
2 Percussion 1
2 Percussion 2

Here is a typical layout for a large concert band:

EXAMPLE 19-1. Score Layout for Concert Band

Flutes
Piccolo
Oboes
English Horn
E♭ Clarinet
1
B♭ Clarinets 2
3
Alto Clarinet
Bass Clarinet
Contrabass Clarinet
Bassoons
Alto 1
(or soprano)
Alto 2
Saxophones
Tenor
Baritone
1
B♭ Cornets 2
3
B♭ Trumpets
1, 2
F Horns
3, 4
1
Trombones 2
3
Euphoniums
Tuba(s)
String Bass
Timpani
Percussion

CONDENSED SCORES

In the band world condensed scores are a tradition. Many band conductors prefer such a score to a full score. This custom, however, is becoming less prominent today, since very sophisticated works for band and wind ensemble do not lend themselves well to this type of compression. Neither does the version of "America the Beautiful" that is given below. Yet, even today some publishers insist that the composer or arranger furnish a condensed score.

Here are two layouts for condensed scores; the first is typical.

Bagley, *National Emblem*

This condensed score is of a famous march. In fact, most such marches are published only as condensed rather than as full scores. The first line contains the music for flutes, oboes, clarinets, alto saxophones, trumpets, and horns; the second line the music for bassoons, bass clarinets, tenor and baritone saxophones, trombones, euphoniums, and tubas. The word *reeds* on these two lines should not be taken literally; it is used as a substitute for the word *woodwinds* in these band scores. If a solo occurs in a march, the instrument or instruments that play the solo are clearly labeled, but in tutti passages the generic terms for each instrumental group are used. The percussion section is usually so very important in the performance of such a march that much more specific information about it is given in the condensed score.

EXAMPLE 19-2. E. E. Bagley, *National Emblem*, edited by Frederick Fennell

a. MM. 1–9

6

mf *crescendo* *f*

mf *f*

K.D.

mp *f* L

S.D. & F.D.

p *crescendo* *f* L

Cym.

mf

B.D.

mf *crescendo* *f* *ff*

b. MM. 29–38

29

f

p

Oboe

mf

Trbs.

ff

mp

R R L R R R L R

pp

pp

p

34

f

(Trbs.)

f

mf

mp

Ward, "America, the Beautiful"

In this more colorful work for band, specific instruments are given in the condensed score. As you can see, so much information has been included in the layout of this score that a full score could be easily created from it.

EXAMPLE 19-3. Samuel A. Ward, "America the Beautiful," arranged for band by Carmen Dragon

a. MM. 1–6

b. MM. 51–53

51

add Obs.

add Picc., Fls., E♭ Cl.

Alt Cl. tacet

rall.

add Eng. Hrn.

rall.

Chimes tacet

rall.

rall.

add Bsns., Bs. Cl.

rall.

rall.

52

Bsns., Alt. Cl. *8va lower*

add Harp

sfz

fff

sfz

add Hrns.

add Bar., Stng. Bs., Tba.

fff

add Timp.

sfz

Tri.

Cym.

ff

S.D.

B.D.

ff

TRANSCRIBING FROM ORCHESTRA TO BAND OR WIND ENSEMBLE

Simulating String Techniques on Band Instruments

In transcribing orchestral works for any band medium, transcribing idiomatic string techniques for band instruments can be a challenge. You must first identify the band instrument that is most readily able to perform the desired string effect. For instance, when strings are asked to play two pitches in a *pianissimo* tremolo, it is best to use a woodwind instrument such as the flute or clarinet, depending on the register in which the tremolo needs to be played. In certain registers the saxophones, or even the horns, might be more effective.

A more difficult simulation would be the string tremolo on one note. Writing a wind or brass flutter tonguing is probably not the right answer, since the technique may be too radical in most styles. A more reasonable solution may be to write the tremolo for a xylophone or a piano, either of which can play a tremolo on a single note.

Pizzicato is another favorite string sound that has no counterpart in the band. For such a unique sound you need to look at the nature and purpose of the pizzicato effect: to produce a short, dry stroke with little reverberation. Certainly this can be simulated by a combination of staccato brass or wind notes doubled at pitch by a xylophone or marimba. Another method would be to use a wind or brass instrument and add piano or harp at pitch to provide the ping. Which instrument to use will depend on the range and the dynamic level—and, of course, the taste of the arranger.

Other idiomatic string sounds are more problematic. For instance, for *sul tasto, sul ponticello,* and *col legno,* try to hear the sound in your mind and choose an instrumental combination in the band that would most closely resemble the sound of this effect. Sometimes it is better to forget about making a literal transcription and to come up with a satisfactory alternative solution that would present the original idea in possibly a new and very creative incarnation.

The one string quality always missed in band transcriptions is the smoothness and power of the cello–double bass combination. Neither the tuba, trombone, bass clarinet, bassoon, nor the low saxophones can approximate that specific sound. Here again it is best to use the available bass instruments creatively, remembering that the ensembles are different and comparisons can be counterproductive. Often, low strings are added to a band scoring, but it is much better simply to love the sound of the bass instruments in the band or wind ensemble.

Two Representative Examples

In Chapter 17 we considered two works that were written for both band and orchestra by the same composer: Milhaud's *Suite française* (Examples 17-15 to 17-17) and Schoenberg's *Theme and Variations*, Op. 43a and b (Examples 17-18 to 17-20). The two versions of both works were written practically simultaneously, and therefore we can legitimately pose the question here of how the composer

rewrote a particular orchestral passage for band. We will study some of the interesting peculiarities of both versions.

In the Milhaud scores (Example 17-16a and b), it is interesting that the pizzicato string bass in the band version appears as an *arco* passage in the orchestral version. Obviously the composer had a *secco* effect in mind, which in the latter version is actually given by the two trombones, which play staccato eighth notes in measures 1 and 5, a technique that allows the orchestral string section to concentrate on providing a unified sound.

In comparing Examples 17-19a and b, we can see how Schoenberg has created a more colorful score for band. The triplet figure, which in the orchestral version is played almost exclusively by the strings (the clarinets in measure 24), is given to a wide variety of instruments in the band version. Examine carefully the longer excerpt in Examples 17-20a and b, especially for those instances where Schoenberg simply transfers band color to the orchestra (or vice versa), as in measures 106–113, where the flute plays the melody in both versions, and in measures 125–128, where the clarinets are assigned the same parts. In measures 113–120 of this example the quiet orchestration of the violas in combination with muted Trumpets 1 and 2 becomes more colorful in the band version through the use of a muted cornet and baritone in combination with the two muted trumpets. And starting in measure 114, the high solo double bass parts of the orchestral version are assigned to a variety of colorful instruments, at various times the tenor, alto, and baritone saxophones, bassoon, bass clarinet, and tuba. All these factors show that transcribing from one medium to another challenges the composer's imagination and knowledge of color, registral characteristics, and dynamic possibilities to balance each ensemble in the most effective and creative manner.

ADDITIONAL WORKS FOR BAND OR WIND ENSEMBLE

We recommend that you study the scores of many of the works for band or wind ensemble from among the following; doing so will enable you to better determine the differences in the treatment of the instruments within a wind ensemble setting from that within an orchestral setting.

S. Adler, Symphony No. 3
W. Benson, *The Solitary Dancer*
H. Brant, *Angels and Devils*
Copland, *Emblems*
M. Colgrass, *Wind of Nagual*
I. Dahl, *Sinfonietta*
V. Giannini, Symphony
M. Gould, Symphony No. 4 (*West Point*)
Hanson, *Chorale and Alleluia*
Hindemith, Symphony for band
R. Kurka, *The Good Soldier Schweik* Suite
F. McBeth, *Kaddish*
P. Mennin, *Canto*
D. Maslanka, *A Child's Garden of Dreams*
R. Nelson, *Aspen Jubilee*
Persichetti, Symphony No. 6
Piston, *Tunbridge Fair*
H. O. Reed, *La Fiesta Mexicana*

J. Schwantner," *. . . and the mountains rising nowhere . . .* "
J. Stamp, *Divertimento in F*
Stravinsky, *Symphonies of Wind Instruments*
F. Ticheli, *Amazing Grace*
J. Tower, *Stepping Stone*, "Celebration Fanfare"
F. Tull, *Sketches on a Tudor Psalm; Variants on an Advent Theme*
R. Washburn, Symphony for band
D. Wilson, *Piece of Mind*

APPENDICES

A

Quick Reference Guides

RANGES OF THE MOST FREQUENTLY USED ORCHESTRAL INSTRUMENTS

On many instruments the uppermost note of the range will vary from professional player to professional player. The ones given here are playable by all professionals and are those usually called for in orchestral playing.

Instrument	*Written Range (Professional)*	*Sounding Range*	*Written Range (Nonprofessional)**	*Comments*
Strings				
Violin		as written		
Viola		as written		
Cello		as written		
Double bass		octave lower		
Harp (with pedals up)		as written		

*Whole notes indicate the range for beginning orchestral players, black noteheads for those playing in amateur groups.
†In all the diagrams that indicate professional written ranges, black noteheads indicate notes not found on every instrument.

*Whole notes indicate the range for [illegible]
†In all the diagrams that indicate professional written ranges, black noteheads indicate notes not found on every instrument.

Instrument	Written Range (Professional)	Sounding Range	Written Range (Nonprofessional)	Comments
Guitar		octave lower		
Mandolin		as written		
Banjo		as written, but tenor banjo sounds octave lower		

Woodwinds

Instrument	Written Range (Professional)	Sounding Range	Written Range (Nonprofessional)	Comments
Piccolo		octave higher		
Flute		as written		
Alto flute		perfect 4th lower		Usually not available in nonprofessional groups
Oboe		as written		

Instrument	*Written Range (Professional)*	*Sounding Range*	*Written Range (Nonprofessional)*	*Comments*
English horn		perfect 5th lower		Very seldom available in nonprofessional orchestras
All clarinets except bass		B♭: major 2nd lower A: minor 3rd lower D: major 2nd higher E♭: minor 3rd higher E♭ alto: major 6th lower		Usually no D or E♭ clarinets are available in nonprofessional orchestras
Bass clarinet		major 9th lower; if written in bass clef, major 2nd lower		May not be available in nonprofessional groups
Bassoon		as written		Lowest and highest notes may not be playable by all nonprofessionals
Contrabassoon		octave lower		Usually not available in nonprofessional groups
All saxophones		B♭ soprano: major 2nd lower E♭ alto: major 6th lower B♭ tenor: major 9th lower		If available in nonprofessional groups, the saxophones should not be scored very low or high

B♭ tenor: major 9th lower · not be scored very low or high

Instrument	Written Range (Professional)	Sounding Range	Written Range (Nonprofessional)	Comments
		E♭ baritone: octave plus a major 6th lower B♭ bass: 2 octaves plus a major 2nd lower		
Brass				
Horn (plus pedal notes)		perfect 5th lower		
All trumpets except E♭ and D bass		C: as written B♭: major 2nd lower D: major 2nd higher E♭: minor 3rd higher B♭ Cornet: major 2nd lower C Bass: octave lower B♭ Bass: major 9th lower Flugelhorn: major 2nd lower		Usually only B♭, C, or D trumpets are used in modern orchestras; all other trumpets, including the cornet and flugelhorn, are mostly used in bands
E♭ and D Bass trumpets		E♭: major 6th lower D: minor 7th lower		
Tenor trombone		as written		

Instrument	*Written Range (Professional)*	*Sounding Range*	*Written Range (Nonprofessional)*	*Comments*
Bass Trombone		as written		
Alto Trombone		as written		Usually not available in nonprofessional orchestras
Tuba	8va...!	as written	8va...!	
Euphonium		as written; if notated in treble clef, major 9th lower		Usually not available in non-professional orchestras but always found in bands
Baritone		as written; if notated in treble clef, major 9th lower		
Percussion				
Timpani	32" 28" 25" 23" 21"	as written		
Xylophone	8va...!	octave higher		

Instrument	Written Range (Professional)	Sounding Range
Marimba		as written
Vibraphone		as written
Glockenspiel		2 octaves higher
Chimes		as written

Keyboard

Instrument	Written Range (Professional)	Sounding Range
Piano		as written

Instrument	Written Range (Professional)	Sounding Range
Celesta	8va	octave higher
Harpsichord		as written
Organ	Manuals 8va Pedal	as written
Harmonium	8va	as written

NAMES OF INSTRUMENTS IN FOUR LANGUAGES AND THEIR ENGLISH ABBREVIATIONS

English	*Italian*	*French*	*German*
Strings	**Archi**	**Cordes**	**Streichinstrumente**
Violin (Vln.)	Violino	Violon	Violine *or* Geige
Viola (Vla.)	Viola	Alto	Bratsche
Violoncello (Vlc.)	Violoncello	Violoncelle	Violoncell
Double bass (D.B.)	Contrabasso	Contrebasse	Kontrabass
Harp (Hp.)	Arpa	Harpe	Harfe
Woodwinds	**Legni (or Fiati)**	**Bois**	**Holzbläser**
Piccolo (Picc.)	Ottavino *or* Flauto piccolo	Petite flûte	Kleine Flöte *or* Pickelflöte
Flute (Fl.)	Flauto	Flûte	Flöte
Oboe (Ob.)	Oboe	Hautbois	Oboe *or* Hoboe
English horn (Eng. Hn.)	Corno inglese	Cor anglais	Englisches Horn
Clarinet (Cl.)	Clarinetto	Clarinette	Klarinette
Bass clarinet (Bs. Cl.)	Clarone *or* Clarinetto basso	Clarinette basse	Bassklarinette
Bassoon (Bsn.)	Fagotto	Basson	Fagott
Contrabassoon (Cbsn.)	Contrafagotto	Contrebasson	Kontrafagott
Saxophone (Sax.)	Sassofono	Saxophone	Saxophon
Brass(es)	**Ottoni**	**Cuivres**	**Blechinstrumente**
Horn (Hn.)	Corno	Cor	Horn
Trumpet (Tpt.)	Tromba	Trompette	Trompete
Trombone (Trb.)	Trombone	Trombone	Posaune
Tuba (Tba.)	Tuba	Tuba	Tuba
Percussion	**Percussione**	**Batterie**	**Schlagzeug**
Piano (Pno.)	Pianoforte	Piano	Klavier
Celesta (Cel.)	Celesta *or* Celeste	Céleste	Celesta
Harpsichord (Hpschd.)	Cemballo	Clavecin	Cembalo
Organ (Org.)	Organo	Orgue	Orgel
Harmonium (Harm.)	Organetto	Harmonium	Harmonium

English	*Italian*	*French*	*German*
Instruments of Definite Pitch			
Idiophones			
Xylophone (Xyl.)	Xilofono *or* Silofono	Xylophone *or* Claquebois	Xylophon *or* Holzharmonika
Marimba (Mar.)	Marimba	Marimba	Marimbaphon
Vibraphone (Vib.)	Vibrafono	Vibraphone	Vibraphon
Glockenspiel *or* Orchestral bells (Glsp.)	Campanelli *or* Campanette	Jeu de timbres *or* Carillon	Glockenspiel *or* Stahlspiel
Tubular Chimes (Chm.)	Campane *or* Capane tubolari	Jeu des cloches	Röhrenglocken *or* Glocken
Crotales (Crot.)	Crotali	Crotales *or* Cymbales antiques	Zimbeln
Musical saw (Saw)	Sega cantante	Lame musicale	Singende Säge
Flexatone (Flex.)	Flessatono	Flexatone	Flexaton
Membranophones			
Timpani (Timp.)	Timpani	Timbales	Pauken
Roto Tom (R. Tom)	Roto-Tom-Tom	Roto-Tom	Tom-Tom-Spiel
Instruments of Indefinite Pitch			
Metal Idiophones			
Crash cymbals (Cymb.)	Piatti *or* Cinelli	Cymbales	Becken *or* Tellern
Suspended cymbal (Susp. Cymb.)	Piattö sospeso	Cymbale suspendue	Hängendes Becken
Sizzle cymbal (Sizzle Cymb.)	Piatto chiodat	Cymbale sur tiges	Nietenbecken
Finger cymbals (Fing. Cymb.)	Cimbalini	Cymbales digitales	Fingerzimbeln
Triangle (Trgl.)	Triangolo *or* Acciarino	Triangle	Triangel
Anvil (Anv.)	Incudine	Enclume	Amboss
Cowbell (Cowb.)	Cencerro	Sonnailles *or* Cloches à vache	Kuhglocken *or* Kuhschellen
Tam-tam (Tam-Tam)	Tamtam	Tam-tam	Tamtam
Gong (Gong)	Gong	Gong	Gong
Metal wind chimes (Metal W. Ch.)	Bacchette di metallo sospese	Baguettes metalliques suspendues	Metall-Windglocken
Wooden wind chimes (Wooden W. Ch.)	Bacchette di legno sospese	Baguettes de bois suspendues	Holz-Windglocken
Bamboo wind chimes (Bamboo W. Ch.)	Tubi di bambù	Bambou suspendu	Bambusrohre

English	Italian	French	German
Glass wind chimes (Glass W. Ch.)	Bacchette di vetro sospese	Baguettes de verre suspendues	Glas-Windglocken
Wooden Idiophones			
Wood blocks (W. Bl.)	Blocci de legno cinese *or* Cassetina	Blocs de bois	Holzblöcke
Temple blocks (T. Bl.)	Blocci de legno coreano	Temple-blocs	Tempel-Blöcke
Claves (Claves)	Claves	Claves	Claves *or* Holzstab
Castanets (Cast.)	Castagnette *or* Nacchere	Castagnettes	Kastagnetten
Sandpaper blocks (Sand Bl.)	Carta vetrata	Papier de verre	Sandpapier *or* Sandblöcke
Ratchet (Ratch.)	Raganella	Crécelle	Ratsche
Slapstick *or* Whip (Slapstick)	Frusta	Fouet	Peitsche
Membranophones			
Snare drum (S. Dr.)	Tamburo piccolo *or* Tamburo militare	Caisse claire *or* Tambour militaire	Kleine Trommel
(with snares on)	(colle corde)	(avec timbres)	(mit Schnarrsaite)
(with snares off)	(senza le corde)	(sans timbres)	(ohne Schnarrsaite)
Tenor drum (Ten. Dr.)	Cassa rullante	Caisse roulante	Wirbeltrommel *or* Rührtrommel
Bass drum (Bs. Dr.)	Gran cassa *or* Gran tamburo	Grosse caisse	Grosse Trommel
(upright)	(verticale)	(verticale)	(aufrecht)
(on side)	(orizzontale)	(à plat)	(liegend)
Tom-Toms (Tom-Toms)	Tom-tom	Tom-tom	Tom-Tom
Timbales (Timb.)	Timpanetti	Timbales cubaines	Kuba-Pauken
Bongos (Bong.)	Bongos *or* Bonghi	Bongos	Bongos
Conga drum (Conga)	Tumba	Conga	Conga-Trommel *or* Tumba
Tambourine (Tamb.)	Tamburo basco *or* Tamburino	Tambour de basque	Tamburin *or* Schellentrommel

FREQUENTLY USED ORCHESTRAL TERMS IN FOUR LANGUAGES

English	Italian	French	German
Muted	Con sordino Con sordini	Sourdine(s)	mit Dämpfer (*or* Gedämpft, in horns)

English	*Italian*	*French*	*German*
Take off mutes	Via sordini	Enlevez les sourdines	Dämpfer(n) weg
Without mute	Senza sordino	Sans sourdine	Ohne Dämpfer
In unison	Unisono (unis.)	Unis	Zusammen
Solo	Solo	Seul	Allein
All	Tutti	Tous	Alle
1. (first only), 2.	1°, 2°	1er, 2e	1ste (*or* einfach), 2te
a 2	a 2	à 2	zu 2
String	Corda	Corde	Saite
Desk *or* Stand	Leggio	Pupitre	Pult
Divided	Divisi (div.)	Divisé(e)s (div.)	Geteilt (get.)
Divided in 3 parts	div. a 3	div. à 3	Dreifach
Divided in 4 parts	div. a 4	div. à 4	Vierfach
Half (a string group)	la metà	la moitié	die Hälfte
At (near) the bridge	Sul ponticello	Sur le chevalet	am Steg
Over the fingerboard	Sul tasto *or* Sulla tastiera	Sur la touche	am Griffbrett
With the wood of the bow	Col legno	Avec le bois	Col legno *or* mit Holz
At the point of the bow	Punta d'arco	(de la) pointe	Spitze
At the frog	al tallone	au talon	am Frosch
In the ordinary way *or* Natural (*after* sul pont., sul tasto, etc.)	Modo ordinario	Mode ordinaire	Gewöhnlich
Near the sounding board (harp)		Près de la table	
Change to piccolo	Muta in piccolo	Changez en petite flûte	Piccolo nehmen
Change C to E (winds and timpani)	Sol muta in mi	Changez do en mi	C nach E umstimmen
Stopped (horns)	Chiuso (Chiusi)	Bouché(s)	Gestopft
Brassy		Cuivré	Schmetternd
Open	Aperto (Aperti)	Ouvert(s)	Offen
Bells in the air	Campane in aria	Pavillons en l'air	Schalltrichter auf *or* Schalltrichter hoch
With soft stick	Bacchetta di spugna	Baguette d'éponge (Baguette molle)	mit Schwammschlegel
With hard sticks	Bacchette di legno	Baguettes en bois	mit Holzschlegeln

B

Select Bibliography

By Samuel Adler and Robert Gibson

Orchestration

Anderson, Arthur O. *Practical Orchestration*. Boston, New York: C. C. Birchard, 1924.

Bennett, Robert Russell. *Instrumentally Speaking*. Melville, N.Y.: Belwin Mills, 1975.

Berlioz, Hector. *Treatise on Instrumentation*. Enlarged and ed. Richard Strauss. Trans. Theodore Front. New York: Kalmus, 1948.

This important historical document stems from two of the finest orchestrators; Richard Strauss's revisions and additions to Berlioz's original text are clearly marked. The treatise contains valuable information and orchestrational ideas that are still valid today.

Black, Dave, and Tom Gerou. *Essential Dictionary of Orchestration*. Los Angeles: Alfred Music Publishing Co., 1998.

This quick reference guide gives the ranges, general characteristics, and scoring tips for all instruments.

Blatter, Alfred. *Instrumentation/Orchestration*. 2d ed. New York: Macmillan, 1997.

Burton, Stephen. *Orchestration*. Englewood Cliffs, N.J.: Prentice-Hall, 1982.

Casella, Alfredo. *La Tecnica dell'orchestra contemporanea*. Milan: Ricordi, 1959.

One of the finest sources of information about twentieth-century orchestration by one of the leading Italian composers. This book has never been translated into English.

Del Mar, Norman. *The Anchor Companion to the Orchestra*. London, New York: Faber and Faber, 1987.

A comprehensive guide to the instruments of the orchestra as well as to the works in which a particular instrument is prominent.

Erpf, Herrmann. *Lehrbuch der Instrumentation*. Mainz: B. Schott's Söhne, 1959.

Forsyth, Cecil. *Orchestration*. Reprint of the second edition (1935). New York: Dover, 1982.

A delightful book full of information on all the orchestral instruments as well as on many less frequently used instruments, including those found in British brass bands.

Gevaert, François A. *Nouveau traité d'instrumentation*. Paris: Lemaine, 1885.

———. *Cours méthodique d'orchestration*. Paris: Lemaine, 1890.

The two Gevaert books, the French successors to Berlioz's treatise, are found only in French.

Humperdinck, Engelbert. *Instrumentationlehre*. Köln: Verlag der Arbeitegemeinschaft für rheinische Musikgeschichte, 1981.

Isaac, Merle. *Practical Orchestration* (for schools). New York: Robbins Music, 1963.

Jacob, Gordon. *The Elements of Ochestration*. Westport, Conn.: Greenwood Press, 1976.

———. *Orchestral Technique*. 3rd ed. London: Oxford University Press, 1982.

Both of the Jacob volumes discuss playing techniques for all the instruments and offer helpful suggestions for employing them in orchestrations. Orchestral Technique *also contains valuable examples of keyboard works transcribed for other instruments.*

Kennan, Kent W., and Donald Grantham. *The Technique of Orchestration*. 5th ed. Englewood Cliffs, N.J.: Prentice-Hall, 1997.

This text includes a compact disc of selected excerpts in the book.

Kling, Henri. *The Art of Instrumentation*. New York: Carl Fischer, 1905.

Koechlin, Charles. *Traité de l'orchestration*. 4 vols. Paris: Max Eschig, 1954–1959.

Kohs, Ellis B. *An Aural Approach to Orchestration*. Published by and available from the author.

Kruckenberg, Sven. *The Symphony Orchestra and Its Instruments*. Twickenham, England: Tiger Books International, 1997.

A beautifully illustrated, large-format book that provides information on the growth of the modern symphony orchestra, and its instruments, literature, and techniques.

Kunitz, Hans. *Die Instrumentation*. 13 vols. Leipzig: Breitkopf und Härtel, 1956–1961.

This series, which devotes an entire volume to each important orchestral instrument, exists only in German. Each volume gives specialized information on each instrument and detailed charts on a variety of playing techniques associated with that instrument. Copious music examples of all possible trills and tremolos for the wind instruments are included.

Leibowitz, René, and Jan Maguire. *Thinking for Orchestra*. New York: Schirmer Books, 1960.

McKay, George F. *Creative Orchestration*. Boston: Allyn & Bacon, 1963.

Piston, Walter. *Orchestration*. New York: W. W. Norton, 1955.

Read, Gardner. *Thesaurus of Orchestral Devices*. Westport, Conn.: Greenwood Press, 1969.

———. *Contemporary Instrumental Technique*. New York: Schirmer Books, 1976.

———. *Style and Orchestration*. New York: Schirmer Books, 1979.

The three Read books are references to orchestral techniques and devices. They are full of examples of contemporary techniques—always giving the pieces in which these techniques may be found—as well as discussions of some neglected aspects of orchestration found in scores from the common practice period to the present.

Rimsky-Korsakov, Nikolai. *Principles of Orchestration*. Trans. Edward Agate. New York: Dover, 1953.

This book is of historical as well as practical interest. All the examples are from Rimsky-Korsakov's own works.

Rogers, Bernard. *The Art of Orchestration*. New York: Appleton-Century-Croft, 1951.

This book contains tremendous insights into orchestrational techniques.

Wagner, Joseph F. *Orchestration*. New York: McGraw-Hill, 1959.

Wellesz, Egon. *Die neue Instrumentation*. Berlin: Max Hesse Handbücher, 1928.

Widor, Charles M. *The Technique of the Modern Orchestra*. London: J. Williams, 1906.

INDIVIDUAL INSTRUMENTAL TECHNIQUE

This section lists books on the techniques of individual instruments. Many of these volumes are devoted to twentieth-century techniques, which extend the original boundaries of the traditional techniques.

Strings

The Violin Family

Bachman, Alberto. *An Encyclopedia of the Violin*. Trans. F. H. Martens. New York: Da Capo Press, 1976.

Galamian, Ivan. *Principles of Violin Playing and Teaching*. Englewood Cliffs, N.J.: Prentice-Hall, 1963.

This book contains detailed information about bowings and string techniques, giving a violinist's perspective on violin playing and teaching.

Green, Elizabeth A. H. *Orchestral Bowings and Routines*. 2d ed. Ann Arbor, Mich.: Ann Arbor Publishers, 1957.

A manual detailing how to apply the basic principles of orchestral bowing to specific examples from the literature.

Nelson, Sheila M. *The Violin and Viola*. New York: W. W. Norton, 1972.

Seagrave, Barbara Garvey, and Joel Berman. *The American String Teachers Dictionary of Bowing Terms for String Instruments*. Urbana, Ill.: American String Teachers Association, 1968.

A comprehensive source of information about bowing terms (including all foreign terms). Each entry lists the common modern usage first, followed by historical or special meanings.

Turetzky, Bertram. *The Contemporary Contrabass*. Berkeley: University of California Press, 1974.

An invaluable guide to new sound possibilities on the double bass.

Yampolsky, I. M. *Principles of Violin Fingering*. Trans. Alan Lumsden. New York: Oxford University Press, 1967.

Zukovsky, Paul. "On Violin Harmonics," *Perspectives of New Music* (Spring/Summer 1968): 174–81.

A well-known performer presents useful information and recommendations about contemporary notation and the performance of violin harmonics. This article also appears in

Perspectives on Notation and Performance, *ed. Benjamin Boretz and Edward T. Cone (New York: W. W. Norton, 1976).*

Other Strings

Quine, Hector. *Guitar Technique*. London: Oxford University Press, 1990.

Salzedo, Carlos. *Modern Study for the Harp*. New York: G. Schirmer, 1948.

The composer gives the symbols for and explanations of the new effects that he created.

Sparks, Paul. *The Classical Mandolin*. New York: Oxford University Press, 1995.

This book explores the techniques and literature for the mandolin from the Classical period to the present.

Stahl, William C. *Stahl's New Mandolin Method*. Milwaukee: J. Flanner, 1900.

Woodwinds

Bartolozzi, Bruno. *New Sounds for Woodwinds*. Trans. Reginald Smith Brindle. London: Oxford University Press, 1967.

This book discusses monophonic and multiphonic possibilities for individual woodwind instruments. The fingerings suggested in the book to produce these effects are easier to use on European-built instruments than on American-built ones. Includes sound recording of these techniques.

Biggers, C. A. *The Contrabassoon: A Guide to Performance*. Bryn Mawr, Pa.: Elkan Vogel, 1977.

Cooper, L. H., and H. Toplansky. *Essentials of Bassoon Technique*. Union, N.J.: Toplansky, 1968.

Dick, Robert. *The Other Flute*. New York: Oxford University Press. 1975.

Dorn, Ken. *Saxophone Techniques*. Vol. I: *Multiphonics*. Islington, Mass.: Dorn Publications, 1975.

Heiss, John C. "For the Flute: A List of Double-Stops, Triple-Stops, Quadruple-Stops, and Shakes." *Perspectives of New Music* (Fall/Winter 1966): 139–42.

———. "Some Multiple-Sonorities for the Flute, Oboe, Clarinet, and Bassoon." *Perspectives of New Music* (Fall/Winter 1968): 136–42.

———. "The Flute: New Sounds," *Perspectives of New Music* (Summer 1972): 153–58.

Three articles from the journal Perspectives of New Music *by a composer-flutist who has great insights into the new techniques on woodwind instruments. The last contains detailed information on multiphonics and extended playing techniques.*

Howell, Thomas S. *The Avant-Garde Flute: A Handbook for Composers and Flutists*. Berkeley: University of California Press, 1974.

This book presents useful information about harmonics, quarter-tone fingerings, and special effects, and catalogues the multiphonic possibilities for the flute according to the degree of their reliability of performance by most flutists.

Kroll, Oskar. *The Clarinet*. Trans. Hilda Morris. New York: Taplinger, 1968.

Originally published as Die Klarinette: ihre Geschichte, ihre Literatur, ihre grossen Meister *(Kassel: Bärenreiter-Verlag, 1965).*

Langwill, Lyndesay Graham. *The Bassoon and Contrabassoon.* New York: W. W. Norton, 1965.

Pellerite, James J. *A Modern Guide to Fingerings for the Flute.* 2d ed. Bloomington, Ind.: Zalo Publications, 1972.

Putnik, Edwin. *The Art of Flute Playing.* Evanston, Ill.: Summy Birchard, 1970.

Rascher, Sigurd M. *Top-Tones for the Saxophone.* Boston: Carl Fischer, 1941.

Rehfeld, P. *New Directions for the Clarinet.* Berkeley: University of California Press, 1978.

Spenser, W. G. *The Art of Bassoon Playing.* Evanston, Ill.: Summy Birchard, 1958.

Sprenkle, Robert, and D. Ledet. *The Art of Oboe Playing.* Evanston, Ill.: Summy Birchard, 1961.

Stein, Keith. *The Art of Clarinet Playing.* Evanston, Ill.: Summy Birchard, 1958.

Teal, Larry. *The Art of Saxophone Playing.* Evanston, Ill.: Summy Birchard, 1963.

Toff, Nancy. *The Flute Book.* New York: Oxford University Press 1996.
A basic book for the flutist as well as the orchestrator.

Tose, G. *Artistic Clarinet Technique and Study.* Hollywood: Highland Music, 1962.

Weisberg, Arthur. *The Art of Woodwind Playing.* New York: Schirmer Books, 1975.

Brass

Baines, Anthony. *Brass Instruments: Their History and Development.* London: Faber and Faber, 1976; reprinted with corrections in 1978 and 1980. New York: Dover, 1993.

Bevan, Clifford. *The Tuba Family.* New York: Charles Scribner's Sons, 1978.

Farkas, Philip. *The Art of French Horn Playing.* Evanston, Ill.: Summy Birchard, 1956.

Franz, Oscar. *Complete Method for the Horn.* New York: Carl Fischer, 1906.

Herbert, Trevor, and John Wallace, eds. *The Cambridge Companion to Brass Instruments.* Cambridge: Cambridge University Press, 1997.

Morley-Pegge, R. *The French Horn.* New York: W. W. Norton, 1973.

Schuller, Gunther. *Horn Technique.* London: Oxford University Press, 1962.
The noted composer and horn player has included a chapter that clarifies a number of commonly held misconceptions about writing for the horn.

Wick, Dennis. *Trombone Technique.* New York: Oxford University Press, 1984.

Percussion and Keyboard

Blades, James. *Orchestral Percussion Technique.* New York: Oxford University Press, 1973.

Davis, Roger. *The Organists' Manual.* New York: W. W. Norton, 1985.

Peinkofer, Karl, and Fritz Tannigel. *Handbook of Percussion Instruments*. Trans. K. and E. Stone. Mainz: B. Schott's Söhne, 1976.

Ramada, Manel. *Atlas de los instrumentos de percusión*. Valencia, Spain: Rivera Editores, 1999.

A concise dictionary, in Spanish, of about one thousand percussion instruments. Each entry includes the instrument's name translated into several languages, including English; its symbol; its classification (wood, metal, and so on); and its notation.

Reed, H. Owen, and Joel T. Leach. *Scoring for Percussion*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

This book discusses the commonly used percussion instruments, more obscure instruments, and special effects. Chapters on percussion notation are particularly useful.

Smith Brindle, Reginald. *Contemporary Percussion*. New York: Oxford University Press, 1970.

THE HISTORY OF THE ORCHESTRA AND OF ORCHESTRAL INSTRUMENTS

Baines, Anthony. *Musical Instruments Through the Ages*. Baltimore: Penguin Books, 1961.

———. *Woodwind Instruments and Their History*. London: Faber and Faber, 1967.

Barnes, William H. *The Contemporary American Organ*. New York: J. Fischer, 1952.

Bate, Philip. *The Flute: An Outline of Its History, Development and Construction*. New York: W. W. Norton, 1975.

———. *The Oboe: An Outline of Its History, Development and Construction*. 3rd ed. New York: W. W. Norton, 1975.

———. *The Trumpet and Trombone: An Outline of Their History, Development, and Construction*. 2d ed. New York: W. W. Norton, 1978.

Becker, Hans. *History of Instrumentation*. Cologne: Arno Verlag, 1964.

Bekker, Paul. *The Orchestra*. New York: W. W. Norton, 1963.

Bellow, A. *The Illustrated History of the Guitar*. New York: Colombo, 1970.

Belt, Phillip, et al. *The Piano*. New York: W. W. Norton, 1988.

Bevan, Clifford. *The Tuba Family*. New York: Charles Scribner's Sons, 1978.

Blades, James. *Percussion Instruments and Their History*. London: Faber, 1975.

Brymer, Jack. *The Clarinet*. New York: Schirmer Books, 1976.

Carse, Adam. *History of Orchestration*. New York: Dover Publications, 1964.

———. *The Orchestra from Beethoven to Berlioz*. Cambridge: W. Heffer & Sons, Ltd., 1948.

———. *The Orchestra in the XVIIIth Century*. Cambridge: W. Heffer & Sons, Ltd., 1940.

———. *Musical Wind Instruments*. New York: Da Capo Press, 1966.

Coerne, Louis A. *The Evolution of Modern Orchestration*. New York: Macmillan, 1908.

Cowling, Elizabeth. *The Cello*. New York: Charles Scribner's Sons, 1975.

Geiringer, Karl. *Musical Instruments*. New York: Oxford University Press, 1945.

Goossens, Eugene, and Evelyn Rothwell. *The Oboe*. New York: Schirmer Books, 1977.

Gregory, Robin. *The Horn*. New York: Praeger, 1969.

———. *The Trombone*. New York: Praeger, 1973.

Kentner, Louis. *Piano*. New York: Schirmer Books, 1976.

Korn, Richard. *Orchestral Accents*. New York: Farrar, Strauss, and Cudahy, 1956.

Kroll, Oscar. *The Clarinet*. Trans. Hilda Morris. New York: Taplinger, 1968.

Langwill, Lindesay Graham. *The Bassoon and the Contrabassoon*. New York: W. W. Norton, 1975.

Leipps, Emile. *The Violin*. Trans. H. W. Parry. Toronto: Toronto University Press, 1969.

Menuhin, Yehudi, William Primrose, and D. Stevens. *Violin and Viola*. New York: Schirmer Books, 1976.

Niland, Austin. *Introduction to the Organ*. London: Faber and Faber, 1968.

Owen, Barbara, and Peter Williams. *The Organ*. New York: W. W. Norton, 1988.

Peyser, Joan. *The Orchestra: Origins and Transformations*. New York: Charles Scribner's Sons, 1986; paperback ed., New York: Billboard Books, 2000.

A wide-ranging collection of articles by noted contributors, which deal with the history of the orchestra and issues related to orchestrating with various historical instruments.

Reusch, R. *The Harp*. New York: Praeger, 1969.

Sachs, Curt. *The History of Musical Instruments*. New York: W. W. Norton, 1940.

Sadie, Stanley, ed. *The New Grove Dictionary of Musical Instruments*. New York: Grove's Dictionaries of Music, Inc., 1984.

Turnbull, H. *The Guitar from the Renaissance to the Present Day*. New York: Charles Scribner's Sons, 1974.

Wheeler, Tom. *The Guitar Book*. New York: Harper and Row, 1974.

BAND AND WIND ENSEMBLE SCORING, FILM SCORING, AND COMMERCIAL ARRANGING

Baker, Mickey. *Complete Handbook for the Music Arranger*. New York: AMSCO Press, 1970.

Cacavas, John. *Music Arranging and Orchestration*. Melville, N.Y.: Belwin Mills Publishing Co., 1975.

Clappe, Arthur. *Principles of Wind-Band Transcription*. New York: Carl Fischer, 1921.

Grove, Dick. *Arranging Concepts*. Studio City, Calif.: First Place Music Publishers, 1972.

Hagen, Earle. *Scoring for Film: A Complete Text*. N.p: E. D. J. Music Inc. (part of C. P. P. Belwin Music), 1971.

Lang, Philip. *Scoring for Band*. New York: Mills Music, 1950.

Mancini, Henry. *Sounds and Scores: A Practical Guide to Professional Orchestration*. N.p.: Northridge Music Co. Inc., 1962. Distributed by Cherry Lane Music Co.

This book discusses the instruments of the studio orchestra as well as arranging for studio orchestra, drawing examples from the author's motion picture, television, and commercial recordings. A recording is included.

Prendergast. Roy. *Film Music: A Neglected Art*. 2d ed. New York: W. W. Norton, 1992.

Sebesky, Don. *The Contemporary Arranger*. Los Angeles: Alfred Music Co., 1975.

A recording is available.

Skinner, Frank. *Underscore*. Hollywood: Criterion Music, 1960.

Wagner, Joseph F. *Band-Scoring*. New York: McGraw-Hill, 1960.

Wright, D. *Scoring for Brass Band*. Colne, Lancs., England: J. Duckworth, 1935.

COMPUTER AND ELECTRONIC MUSIC

Anderson, Craig. *MIDI for Musicians*. New York: AMSCO Press, 1986.

A guide to working with MIDI.

Cook, Perry R. *An Introduction to Psychoacoustics*. Cambridge, Mass.: The MIT Press, 1997.

An excellent text on how the brain processes and interprets sound. Includes units on cognitive psychology, the physics of sound, and computerized sound generation.

Dodge, Charles, and Thomas Jerse. *Computer Music: Synthesis, Composition, and Performance*. 2d ed. New York: Schirmer Books, 1997.

Provides an excellent introductory overview to the theory and practice of computer and electronic music techniques.

Manning, Paul. *Electronic and Computer Music*. London: Oxford University Press, 1994.

This invaluable book contains a thorough history of this genre as well as technical explanations, a bibliography, and a discography.

Pellman, Samuel. *An Introduction to the Creation of Electroacoustic Music*. New York: Wadsworth, 1994.

An accessible and thorough introductory text, especially well suited to those with little prior background in this subject.

Roads, Curtis. *The Computer Music Tutorial*. Cambridge, Mass.: The MIT Press, 1996.

A comprehensive and accessible introduction to the practice, history, and theory of computer music techniques.

Roads, Curtis, and John Strawn. *Foundations of Computer Music*. Cambridge, Mass.: The MIT Press, 1985.

Rowe, Robert. *Interactive Music Systems*. Cambridge, Mass.: The MIT Press, 1992.
Surveys graphical computer programs and systems that can analyze, compose, and participate in music performance in real time.

Recommended Journals

Computer Music Journal. Cambridge, Mass.: The MIT Press.

Electronic Musician. Berkeley, Calif.: Mix Publications.

Keyboard. Cupertino, Calif.: GPT Publications.

Leonardo Journal (MIT Press Journals, Five Cambridge Center, Cambridge, Mass. 02142-1407) and the online *Leonardo Electronic Almanac* (http://mitpress.mit.edu/e-journals/LEA/home.html).

ACKNOWLEDGMENTS

PHOTOGRAPHS

p. 51 Courtesy of Louis Ouzer; p. 65 Courtesy of Louis Ouzer; p. 75 Courtesy of Louis Ouzer; p. 83 Courtesy of Louis Ouzer; p. 89 Courtesy of Louis Ouzer; p. 101 Stan Jay/Mandolin Bros.; p. 104 Stan Jay/Mandolin Bros.; p. 106 Stan Jay/Mandolin Bros.; p. 108 Used by the kind permission of James Jones-Musical Instruments: www.jamesjonesinstruments.com; p. 180 Courtesy of Louis Ouzer; p. 194 Courtesy of Louis Ouzer; p. 205 Courtesy of Louis Ouzer; p. 217 Courtesy of Louis Ouzer; p. 221 Courtesy of Louis Ouzer; p. 302 Warder Collection; p. 308 Courtesy of Osmun Music, Inc.; p. 309 Top and Middle: Courtesy of Osmun Music, Inc. Bottom: Used by the kind permission of Johnson Cases, Inc.: www.johnsoncases.com; p. 310 Courtesy of Osmun Music, Inc.; p. 312 Courtesy of Louis Ouzer; p. 325 Courtesy of Louis Ouzer; p. 341 Courtesy of Louis Ouzer; p. 349 Courtesy of Louis Ouzer; p. 432 Courtesy of Louis Ouzer; p. 436 Courtesy of Louis Ouzer

MUSIC

Belmont Music Publishers

Schoenberg, Brahms: *Piano Concerto in g minor, Theme and Variations*. Op. 43a
Used by permission of Belmont Music Publishers, Pacific Palisades, CA 90272

Schoenberg, Brahms: *Piano Concerto in g minor, Theme and Variations*, Op. 43b
Used by permission of Belmont Music Publishers, Pacific Palisades, CA 90272

Schoenberg, *Erwartung*
Used by permission of Belmont Music Publishers, Pacific Palisades, CA 90272

BOOSEY & HAWKES

Bartók, *Concerto for Orchestra* © Copyright 1946 by Hawkes and Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Bartók, *Concerto for Piano*, No. 3 © Copyright 1947 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Bartók, *Concerto for Violin* © Copyright 1946 by Hawkes and Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Bartók, *Divertimento* © Copyright 1940 by Hawkes and Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Bartók, *Mikrokosmos (Volumes 1–6)* © Copyright 1940 by Hawkes and Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Bartók, *Music for Strings, Percussion and Celesta* © Copyright 1937 for the U.S.A. by Boosey & Hawkes, Inc. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Strauss, *Der Rosenkavalier* © Copyright 1910, 1911 by Adolph Furstner. Copyright Renewed. Copyright assigned 1943 to Hawkes & Son (London) Ltd. (a Boosey & Hawkes Company) for the world excluding Germany, Italy, Portugal and the former Territories of the USSR (excluding Estonia, Latvia, and Lithuania). Reprinted by permission of Boosey & Hawkes, Inc.

Strauss, *Ruhe, meine Seele*, Op. 27, No. 1 Courtesy of Boosey & Hawkes, Inc.

Strauss, *Salome* © Copyright 1905 by Adolph Furstner. Copyright Renewed. Copyright assigned 1943 to Hawkes & Son (London) Ltd. (a Boosey & Hawkes Company) for the world excluding Germany, Italy, Portugal and the former Territories of the USSR (excluding Estonia, Latvia, and Lithuania). Reprinted by permission of Boosey & Hawkes, Inc.

Strauss, *Sinfonia domestica* © Copyright 1904, 1932 by Bote & Bock Musik- und Buhnenverlag GMBH & Co., Berlin (a Boosey & Hawkes company). Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *J.S. Bach Choral Variations* © Copyright 1956 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Movements for Piano and Orchestra* © Copyright 1960 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Orpheus* © Copyright 1948 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Petrushka* © Copyright 1912 by Hawkes and Son (London) Ltd. Copyright Renewed. Revised version: © Copyright 1948 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Pulcinella Suite* © Copyright 1925 by Hawkes and Son (London) Ltd. Copyright Renewed. Revised version © Copyright 1966 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Le Sacre Du Printemps* © Copyright 1912, 1921 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Threni* © Copyright 1958 by Boosey & Co. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Symphony of Psalms* © Copyright 1931 by Hawkes and Son (London) Ltd. Copyright Renewed. Revised version: © Copyright 1948 by Hawkes & Son (London) Ltd. Copyright Renewed. Reprinted by permission of Boosey & Hawkes, Inc.

Stravinsky, *Symphony in Three Movements* Couretsy of Boosey & Hawkes, Inc.

Oxford University Press

Vaughan Williams, *Symphony No. 6 in E minor* © Oxford University Press 1948 Used by permission. All rights reserved.

Walton, *Belshazzar's Feast* © Oxford University Press 1931. Renewed in USA 1959.Used by permission. All rights reserved.

C. F. Peters Corporation

Bassett, *Variations* © 1966 by C. F. Peters Corporation; Used by permission.

Benson, *Symphony for Drums and Wind Orchestra* © 1963 by Henmar Press, Inc.; Used by permission of C. F. Peters Corporation.

Schoenberg, *Five Pieces for Orchestra* © 1952 by Henmar Press, Inc.; Used by permission of C. F. Peters Corporation.

Strauss, *Don Juan* Used by permission of C. F. Peters Corporation.
Strauss, *Don Quixote* Used by permission of C. F. Peters Corporation.
Strauss, *Till Eulenspiegel* Used by permission of C. F. Peters Corporation.
Strauss, *Also Sprach Zarathustra* Used by permission of C. F. Peters Corporation.

Tetra Music Corporation

Dahl, *Sinfonietta* © 1969 by Tetra Music Corporation c/o Plymouth Music, Inc. 170 N. E. 33rd St. P.O. Box 24330 Ft. Lauderdale, Fla 33307

Theodore Presser Co.

Milhaud, *La Creation Du Monde* © 1923 Editions Max Eschig. Used By Permission
Ravel, *Bolero* © 1929 Durand S. A. Used By Permission
Ravel, *Daphnis et Chloe, Ballet* © 1913 Durand, S. A. Used By Permission
Ravel, *Daphnis et Chloe, Suite No. 1* © 1913 Durand, S. A. Used By Permission
Ravel, *Ma Mere l'Oye* © 1912 Durand, S. A. Used By Permission
Ravel, *Pavane for a Dead Princess* © 1910 Editions Max Eschig. Used By Permission
Ravel, *Rapsodie Espagnle* © 1908 Durand, S. A. Used By Permission
Ravel, *La Valse* © 1921 Durand, S. A. Used By Permission
Schuman, *New England Triptych* © 1957 Merion Music, Theodore Presser Company sole representative. Used By Permission Of The Publisher
Stachowski, *Irisation for Orchestra* © Polski Wydawnictwo Muzyczne. Used by permission.

Seesaw Music

Polin, *The Death of Procris* from The Death of Procris by Claire Polin. Copyright 1974 by Seesaw Music Corp. New York. Reprinted by permission.

Shawnee Press

Stravinsky, *Les Noces* Copyright © for all countries 1922, 1990. Chester Music, a Division of Music Sales Ltd. 8/9 Frith Street, London W1V 5TZ

G. Schirmer/ Music Sales Corp./ Associated Music Publishing

Barber, *Essay for Orchestra, No. 1* Copyright © 1941 (Renewed) by G. Schirmer, Inc. (ASCAP) International Copyright Secured. All Rights Reserved. Reprinted by Permission of G. Schirmer, Inc.
Barber, *Symphony No. 1* Copyright © 1943 (Renewed) by G. Schirmer, Inc. (ASCAP) International Copyright Secured. All Rights Reserved. Reprinted by Permission of G. Schirmer, Inc.
Bloch, *Schelmo* Copyright © 1918, 1945 (Renewed) by G. Schirmer, Inc. (ASCAP) International Copyright Secured. All Rights Reserved. Reprinted by Permission of G. Schirmer, Inc.

Weinberger, *Polka and Fugue (From Schwanda and The Bagpiper)* Copyright © 1930 (Renewed) by Associated Music Publishers, Inc. (BMI) International Copyright Secured. All Rights Reserved. Reprinted by permission of Associated Music Publishers, Inc.

Warner Bros.

Berg, *Lyric Suite* © 1927 by Universal Edition; Copyright renewed; All Rights Reserved; Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Universal Edition.

Berg, *Violin Concerto* © 1936 by Universal Edition. Copyright renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Universal Edition.

Berio, *Circles* © 1976 by Universal Edition (London) Ltd., London. Used by permission of European American Music Distributors Corporation, sole U. S. agent for Universal Edition.

Crumb, *Echoes of Time and the River* © 1968 Mills Music, Inc., a division of Filmtrax Copyright Holdings, Inc. International Copyright Secured. Made in U. S. A. All Rights Reserved.

Druckman, *Windows* © 1973 by MCA Music, a Division of MCA Inc., New York, N. Y. Used by permission. All rights reserved.

Gershwin, *Concerto in F* © 1927 New World Music Corporation. Copyright Renewed. All Rights Reserved. Used by permission of Warner Bros. Music.

Gershwin, *Rhapsody in Blue* © 1924 WB Music Corp. Copyright Renewed. All Rights Reserved. Used by permission.

Gershwin, *Rhapsody in Blue (original version for the Whitman Band)* © 1924 WB Music Corp.; Copyright Renewed. All Rights Reserved. Used by permission.

Gould, *Interplay* © 1961 Mills Music, Inc., a division of Filmtrax Copyright Holdings, Inc. International Copyright Secured. Made in the U. S. A. All Rights Reserved.

Hindemith, *Kleine Sonate* © B. Schott's Söhne, Mainz, 1929. © renewed 1957. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Hindemith, *Mathis der Maler* © B. Schott's Söhne, Mainz, 1934. © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Hindemith, *Nobilissima Visione* © B. Schott's Söhne, Mainz, 1940; © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Hindemith, *Der Schwanendreher* © B. Schott's Söhne, Mainz, 1936. © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Hindemith, *Sonata, Op. 11, No. 4* © B. Schott's Söhne, Mainz, 1921. © renewed by Schott & Co., Ltd., London 1949.Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Hindemith, *Symphonic Metamorphoses* © Associated Music Publishers Inc., New York, 1945. © Assigned to B. Schott's Söhne, 1946. © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Kodaly, *Hary Janos* © 1927 by Universal Edition. © assigned 1952 to Universal Edition (London) Ltd., London. © renewed. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Universal Edition, London.

Kodaly, *Psalmus Hungaricus* © 1926 by Universal Edition. © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Kotonski, *A Battere* © Warner Bros. Music Corp. Copyright Renewed. All Rights Reserved. Used by permission.

Mahler, *Symphony No. 10* © Copyright by Universal Edition, A. G., Wien. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U.S. and Canadian agent for Universal Edition Vienna.

Milhaud, *Suite Francaise* © 1945, 1946, 1947 by MCA Music, A Division of MCA Inc., New York, N. Y. Used by permission. All rights reserved.

Orff, *Carmina Burana* © B. Schott's Söhne, Mainz, 1937. © renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for B. Schott's Söhne.

Penderecki, *Dies Irae* © 1967 by Moeck Verlag, All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Moeck Verlag.

Penderecki, *Threnody to the Victims of Hiroshima* © by Moeck Verlag. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Moeck Verlag.

Schuller, *Seven Studies on Themes of Paul Klee* © 1962 by Universal Edition London; All Rights Reserved; Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Universal Edition London.

Webern, *Six Pieces for Orchestra, Op. 6* © Copyright 1961 by Universal Edition, A. G., Wien. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U.S. and Canadian agent for Universal Edition Vienna.

Webern, *Symphony, Op. 21* © Copyright 1929 by Universal Edition. Copyright renewed. All Rights Reserved. Used by permission of European American Music Distributors Corporation, sole U. S. and Canadian agent for Universal Edition.

INDEX

Page numbers in *italics* indicate illustrations.



THE STUDY OF ORCHESTRATION

THIRD EDITION

SAMUEL ADLER

Through two highly successful editions, *The Study of Orchestration* has set the standard for orchestration texts, providing the most comprehensive treatment of both orchestration and instrumentation. In addition to its treatment of scoring for individual instruments, instrumental combinations, and full orchestra, *The Study of Orchestration* now boasts a new chapter on scoring for band and wind ensemble, expanding the scope of the text and rounding out its coverage. While following the pedagogical approach established by its predecessors, the Third Edition also embraces new technology and responds to the needs of today's students and teachers. With an exciting new set of six enhanced CDs added to the already comprehensive ensemble, *The Study of Orchestration* is the most complete instructional package available and the ideal reference tool for students, teachers, performers, composers, and arrangers.

Features of *The Study of Orchestration*, Third Edition

- The prose has been thoroughly revised in light of current practices and refreshed to appeal to today's students.
- Music examples represent a broader range of compositions, composers, repertories, and styles.
- Newly typeset music examples make for easier reading and greater clarity.

SAMUEL ADLER has composed over four hundred published works, including five operas, six symphonies, twelve concerti, eight string quartets, and many other orchestral, band, choral, and vocal works. He has taught at the University of North Texas (1957–1966) and the Eastman School of Music of the University of Rochester (1966–1995), and is presently a member of the composition faculty at the Juilliard School of Music. He has authored several books, including *Choral Conducting* and *Sight Singing*. In 1993, Professor Adler was elected to the Chilean Academy of Fine Arts in recognition of "his outstanding contribution to the world of music as composer, conductor, and author" and in 1997 to the German Freie Akademie der Kunst. In 2001, he was inducted into the American Academy of Arts and Letters. As a conductor, he has appeared with many of the leading orchestras in the United States and abroad, and over fifty of his works are recorded commercially on major American and European labels.

TO ACCOMPANY
The Study of Orchestration

Workbook to Accompany *The Study of Orchestration*

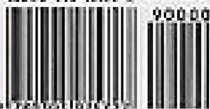
Third Edition
Samuel Adler

The techniques discussed in each chapter of the text are reviewed and reinforced in the workbook. It includes graded skill tests about each choir of the orchestra, as well as worksheets on special topics. Featuring a broader array of "Listen and Score" exercises, the new edition provides opportunities for students to practice reducing orchestral scores to piano scores.

Six Enhanced Compact Discs

Samuel Adler and Peter Hesterman

A new set of six enhanced CDs—recorded at the Eastman School of Music specifically for use with *The Study of Orchestration*—provides aural reinforcement of the examples in the text and workbook. In addition to state-of-the-art digital sound quality, the CDs contain HDTV quality video clips of musicians demonstrating orchestral techniques on a variety of instruments. Hyperlinked explanatory texts, glossaries, and indexes (of composers, terms, instruments, and works) offer students a wealth of valuable information as well as opportunities to apply what they learn.





W. W. NORTON
NEW YORK • LONDON

www.wwnorton.com